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The Stuff That Dreams Are Made Of 4

Every kid has dreams of adventure by way of a backyard fort or makeshift treehouse. In Joe Dante's summertime jaunt, *Explorers*, the dream comes true. Only this time the journey begins when a homemade spaceship devised by three young boys really does take off for parts unknown and brings the trio face-to-face with some hilariously offbeat Rob Bottin-designed aliens. With the effects expertise of Industrial Light and Magic and the computer-generated animation of Omnibus Computer Graphics, Dante and company launched a \$25 million expedition into the cinematic firmament. *Article by Adam Eisenberg.*

Baring the Soul of 'Lifeforce' 34

Bizarre makeup and unusual opticals are prime elements of the modern horror or science fiction film, and director Tobe Hooper's *Lifeforce*—an incredible combination of the two genres—is replete with both. Keeping up with an effects-a-minute pace was no easy task for the international crew, and John Dykstra and key members of his Apogee organization discuss challenges faced on the visual effects front. From conventional model photography to innovative laser applications, the production team concocted an assortment of illusions to help bring Colin Wilson's tale of soul-snatching vampires to life. *Article by Glenn Campbell.*

Shooting for an 'A' on 'My Science Project' 54

Screenwriter Jonathan Betuel was certain of two things while shopping his *My Science Project* script around Hollywood—he wanted to direct the film, and it had to feature a terrifying tyrannosaurus rex sequence. Walt Disney Productions agreed and gave Betuel the directorial reins for his fantasy-adventure yarn about a high school science experiment gone awry. Along with effects supervisor John Scheele, dinosaur-builder Doug Beswick and other members of the effects ensemble, first-time director Betuel reflects upon the unlikely logistics of getting a prehistoric carnivore into the school gymnasium. *Article by Stephen Rebello.*

FRONT COVER—The *Thunder Road* meets an alien spacecraft in *Explorers*. Heck, a teenage extraterrestrial out for a joyride, in *Explorers*—BACK COVER.



THE STUFF THAT DREAMS ARE MADE OF

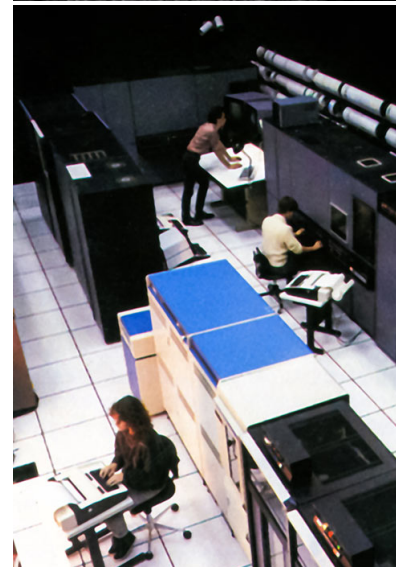
Director Joe Dante reviews some *Explorers* reference material with actor Jason Presson. / Major portions of the film's kinetic dream sequences feature computer-generated imagery devised by Omnibus Computer Graphics — brought to cinematic fruition in their high-tech machine room via a Foonly F-1 main frame processor, a VAX 11/780 computer and two high-resolution film recorders. / Animator and designer Michiko Suzuki at the Omnibus encoding station creates digitized circuit-board components for the electronic landscape in *Dream Two*. Interactive cursors are employed to encode corresponding points on multi-view schematic drawings into three-dimensional black-and-white representations which will later be refined and transformed into color. / A computer-generated shaded element pass for *Dream Two*.

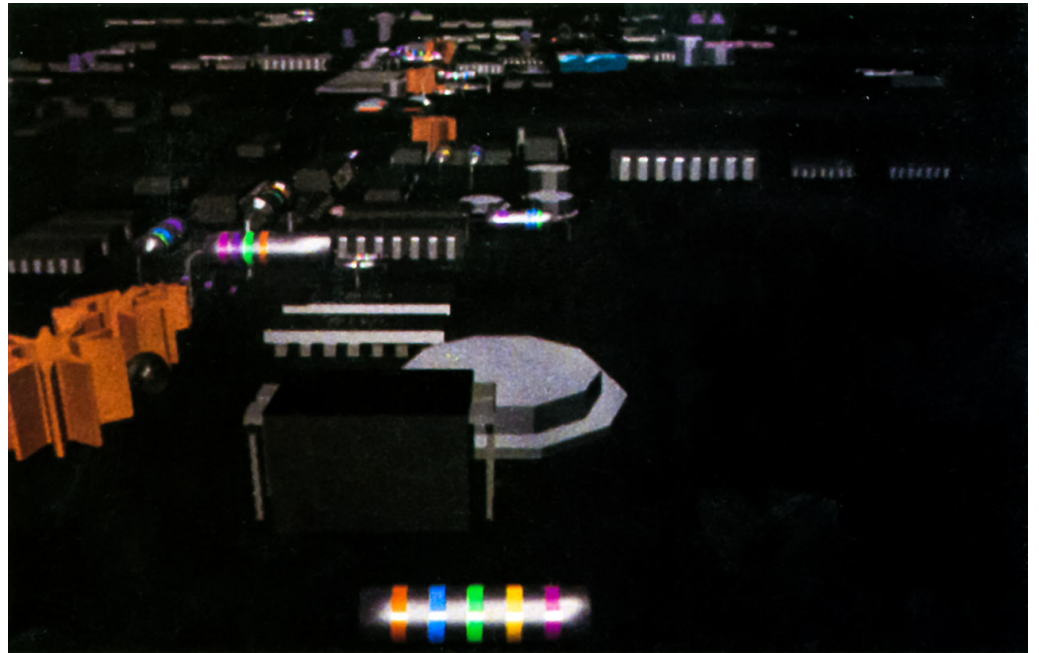
Explorers begins with a vision of a vast computer landscape — a flat, colorful schematic that extends off into the horizon. As we gracefully fly over it, we realize that it is all part of a dream — the first of three in the film. This one, dreamt by a boy named Ben Crandall (Ethan Hawke), reveals the schematic necessary to build a powerful forcefield. In the second dream, which occurs later in the story, all three boys individually imagine themselves flying amid a more complex three-dimensional computer circuit board that reveals to them more about the mysterious field and how they can use it to successfully fly into space. In the context of the film, these dreams are the creations of aliens in deep space who use them as a way to contact the kids. In reality, however, they are carefully designed computer images created by Omnibus Computer Graphics, a company which had previously contributed animation effects for *Star Trek III: The Search for Spock*.

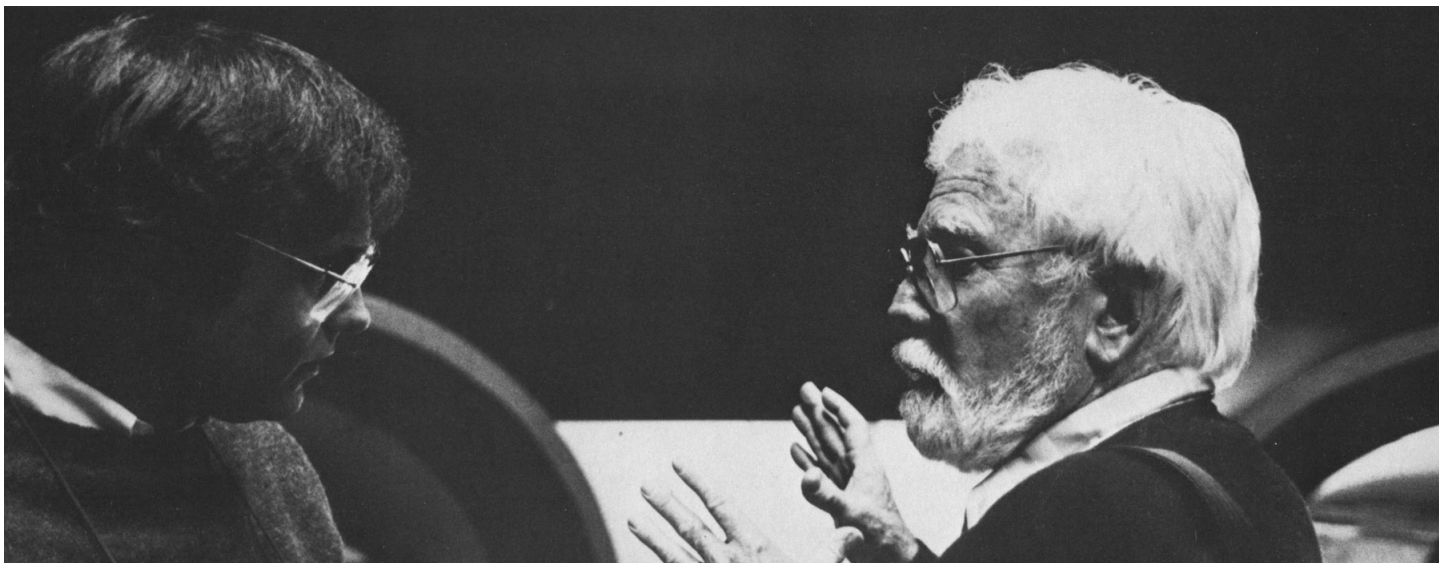
"We initially went with computer graphics because we wanted the sequences to look a little bit different," Dante explained, "but we didn't want them to look like *The Last Starfighter* or *Tron*. Not that those pictures looked bad. They got such flak because that look was expected to carry the entire picture; but what happens is that after a while, the novelty of the effect begins to wear off as you get used to seeing it. In *Explorers*, the computer graphics are used sparingly enough to stay interesting. It's not a lot of people trapped in a computer for a whole movie."

While Dante had strong notions about how the computer effects should be incorporated into the film, he essentially removed himself from the practical side of how Omnibus would achieve them. "I'm ashamed to tell you that there are certain aspects of the production I was not able to keep close tabs on; and one that I immediately assumed might be able to best survive my absence was the computer material, because I'm not as knowledgeable or as computer-wise as other people might be. And since Ralph Winter and Eric Luke and Mike Finnell all seemed to have a handle on that, I let them do a lot of the planning and I just looked in at various stages of completion."

Entering the Hollywood division of Omnibus, located on the Paramount studio lot, is like stepping onto a movie set from *Wargames* or *Colossus - The Forbin Project*. There, a second floor office lined with glass windows overlooks a large, black-walled computer room down below. A bright red, metal stairwell connects the two lower rooms, and the computer room itself is filled with a type of technology that fifteen years ago was science fiction. In this facility, creative supervisor Art Durinski oversaw the work for *Explorers* using the Omnibus F-1, a computer system purchased from Information International Inc. (Triple-I), the company which had produced landmark computer effects for such films as *Tron* and *Looker*. Durinski, a veteran of both films, had suggested that Omnibus purchase the system









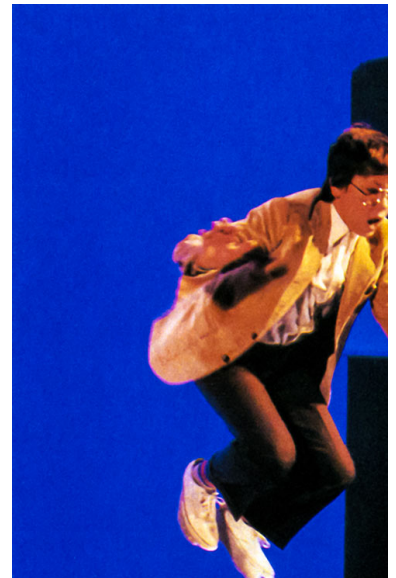
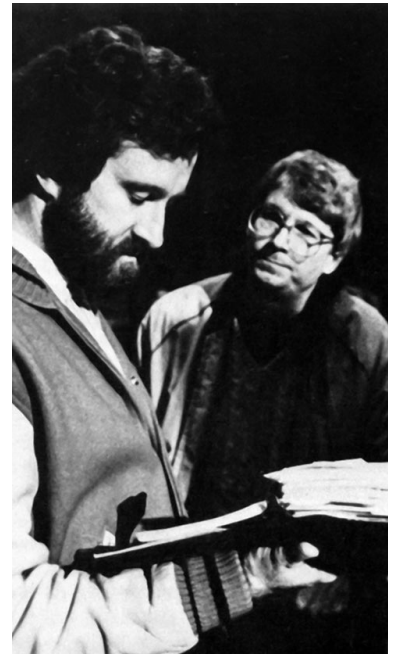
under different types of light and colors, from ultraviolet light to tungsten. Ultimately, we found the UV to be the most interesting. It gave the ball a certain degree of transparency and a certain amount of luminescence which helped the bubble look more round. It also made it more three-dimensional-looking, and that was what we wanted. We then took some stills of the ball under the UV light and had transparencies made from them. The transparencies had a real neat UV glow on them that we used to represent the glow of the edge of the forcefield."

In practice, the transparencies were placed on the animation stand and rephotographed by a camera that replicated the moves done on background plates which had been shot on the set of Wolfgang's basement laboratory. Then, in addition to the outline provided by the transparencies, the bubble was enhanced by two other animation techniques. First, animated highlights were incorporated into the shots to create reflections of the basement room lights on the bubble. Second, and perhaps most importantly, the background of the room seen through the ball had to be distorted to imitate the look of real bubbles. This distortion was particularly necessary for shots where the outline of the bubble itself would not be completely visible.

As a means of visualizing the invisible, animation supervisor Bruce Walters suggested that the forcefield could easily be detected by the distortion it created. When someone looked at the sphere, they would see the background behind it distorted by the field. "In other words," Nicholson elaborated, "animation would shoot us a bubble, which would be the rephotographed element made from the transparency of the ball under UV light. They would also shoot a holdout matte which would be a silhouette of the shape of the bubble. Then, using that matte, we would hold out the background seen through the bubble and replace it with a distortion of that background. This distortion would simply be a size change of the background itself. So this resulted in essentially two background plates — one that was normal size and one that was not. Then we put the distorted size within the area of the bubble.

"The actual distortion was anywhere from around five percent to roughly twenty percent. It would vary in size depending on the background. Generally, we made it smaller because that seemed to work better. The distortion was all done in the optical step — in the intermediate step of the composite. Since we were shooting all of our plates in VistaVision, we had to get back to 4-perf standard size when our work was completed. So, in the intermediate step, we would produce all of these elements — the distortion background element, the bubble glow, the bubble highlight and a crescent enhancement. Then we put that all together in the final composite which would be in 1.66 aspect ratio, and it worked out fine. We weren't going any extra generations in our composite process in order to accomplish that, so

Visual effects coordinator Ralph Winter, director of photography John Hora and visual effects supervisor Bruce Nicholson touch bases over a portfolio of storyboard illustrations. / A blue-backed River Phoenix flies through the air with ease — thanks to a concealed fiberglass body harness and a blue pylon connected to a specially devised motion control rig capable of producing a dizzying assortment of spins and turns. / With some unwanted help from his friends, Wolf gets carried away by his experiment. / Stop-motion animator Anthony Laudati positions a miniature puppet for use during shots of the bubble-encased Wolf plowing into







shot had to have the most detail and was complex. "We actually developed something that we believe it was a sphere instead of a cube. A particular case was when the kids were in the camera lens, and between the lens and the film was the bubble. Well, neither one of the kids was in the same spot and we had to convince the audience that the bubble was actually floating between the two. It really meant was drawing the bubble on the internal surface of the film, and the only way to do that was to bring in highlights and shadows that would move, even though they really shouldn't. We had to cheat some by suggesting that the soccer ball was moving when the ball was actually in the same place.

"After that shot, the bubble starts moving, and it becomes a kinetic joke — you're watching what it is doing, and you're trying to convince the audience of what it was. It's like you isolate that shot; and once we had that in place. In all of the shots that we did of the bubble, it was sort of a soft distortion, like something was missing, we added further distortion, we added more distortion, it was tailored to make sure that the audience was missing something."

When the forcefield does begin zipping sweeps through like a wild tornado. The one of Wolf's cats decides to stroll aboard, sending the forcefield into a fri room, burns a hole through the side of keys and then pops out the other side. It knocks down a few of the boards holding through a steam pipe causing steam to burns a hole through a vertical support several bottles and knocks the head off

The actual destruction caused by the by physical effects coordinator Robert M. ant Dennis Peterson. For most of the eff explosives were used to manifest the in energy field. On the piano, for instance side of the keyboard were rigged with explosive. Then, to make the keys drop underneath them, the keys were rigged was on a cable. The iron, attached to an keys from behind the front board of the holding it was pulled, a microswitch c



Barbara Affonso and Larry Tan complete one of two *Thunder Road* models used during miniature photography. The larger, eighteen-inch craft housed three tiny, servo-mechanized explorer puppets. / Camera assistant Peter Daulton prepares for a bluescreen motion control shot by checking light levels on the smaller, nine-inch miniature. / After gaining altitude, the *Thunder Road* soars triumphantly over neighborhood rooftops and into the night sky. Effects cameraman Pat Sweeney surveys the miniature setting — complete with painted backdrop — to be used as a plate in the final composite. / Sean Joyce highlights a neighborhood matte painting fashioned after the actual *Petaluma* location. / Claudia Mullaly — who, along with Jeff Mann, constructed most of the

On its maiden voyage, the *Thunder Road* gradually lifts up above the nearby housetops. From this unusual vantage point, the boys watch with nervous amusement as some dogs in a neighbor's yard start barking at the hovering ship. In reality, the section above the fence was a matte painting of the neighborhood, and the dogs were actually trained animals that had been filmed as foreground action while their trainer stood on the fence enticing them to bark.

The boys soon leave their neighborhood behind and fly towards a drive-in movie theater where a cheap science fiction thriller called *Starkiller* is playing on the screen — a movie that, like most 'B' films, has a rather peculiar history. "We originally were going to use some scenes from a 1960 Japanese movie called *Battle in Outer Space*," Dante recalled, "but Toho Studios wanted more money for the use of the scenes than I think they spent to make the entire movie. It did have a semi-cheesy quality which seemed to be appropriate for what we wanted, but it got to be too expensive."

Originally, Dante had planned to shoot his own interior scenes and use clips from the Japanese film just for the exterior shots. When that film became unobtainable, he decided to have the exteriors done as well. As a result, Bob and Denny Skotak's L.A. Effects Group was hired to create the necessary space footage. "We got the people at L.A. Effects Group on short notice," said Dante, "because it was decided very late in the game to do the alien spaceships, one of which was based on the 'Empire' VistaVision camera. And the effects they gave us were really not bad. They were actually kind of ingenious. They did all of their laser beams with ghost glass so that everything they handed us was done in the camera. They did quite a few shots and I was impressed with the quality, especially considering how fast they did it."

The work of L.A. Effects Group was designed to match the intentionally-chintzy quality of the interiors which Dante directed on a makeshift set built for the scene. The actors all spoke in different languages, with Robert Picardo as *Starkiller* speaking Italian, Karen Mayo-Chandler as his girlfriend speaking French and *Explorers* production designer Robert F. Boyle speaking English. In addition, assistant director Pat Kehoe appears in the film as a gorilla-suited robot monster. "Then we just did some wild lines on the set and stuck them in so that they're completely out of sync," continued Dante, "and it looks just like those dubbed Italian pictures I used to see in the 1960s — stuff like *Wild, Wild Planet* and *Planet on the Prowl*."

As the adventures of *Starkiller* explode on the drive-in screen, the boys swoop down over the cars and accidentally crash their shin into the concession stand. This sequence involved a full-

shot had to have the most detail and was complex. "We actually developed some things that we don't believe it was a sphere instead of a cube. A particular case was when the kids were looking through the camera lens, and between the lens and the subject was the bubble. Well, neither one of the kids was in the same spot and we had to convince the audience that the bubble was actually floating behind the camera. The real meaning was drawing the bubble on the physical surface of the film, and the only way to do that was to bring in highlights and make it move, even though they really shouldn't. We cheated some by suggesting that the soil in the basement was moving when the ball was in the same place.

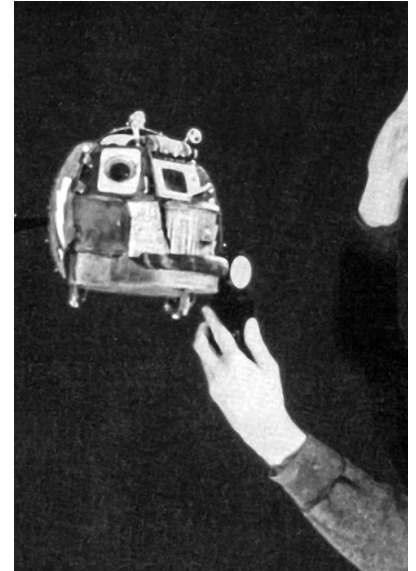
"After that shot, the bubble starts moving, and it becomes a kinetic joke — you're watching what it is doing, not what it's doing. We could drop all the complexity that we had to convince the audience of what it was. It was just us to isolate that shot; and once we had that, we could place. In all of the shots that we did of the bubble, which was sort of a soft, distant, something was missing, we added further



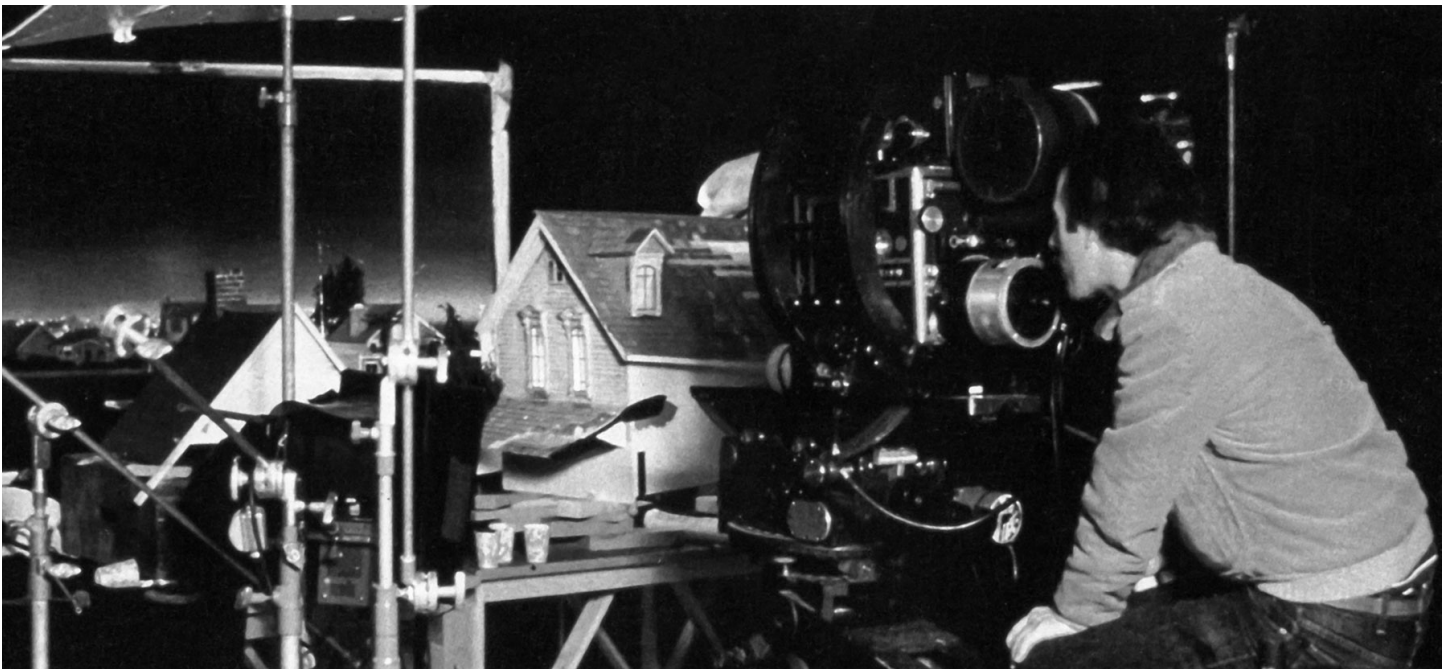
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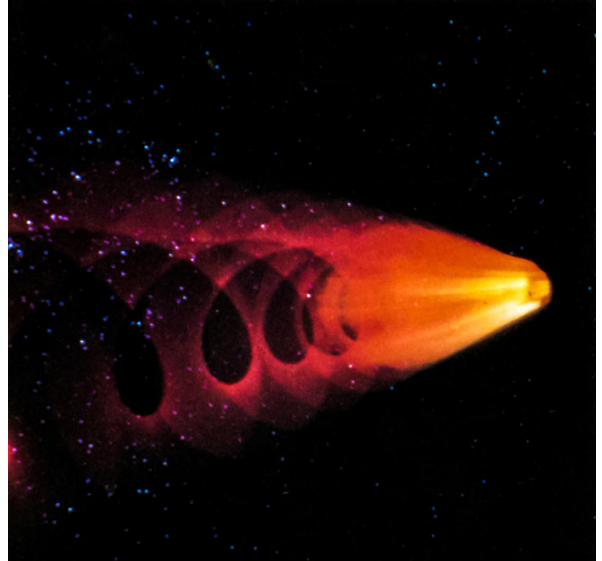












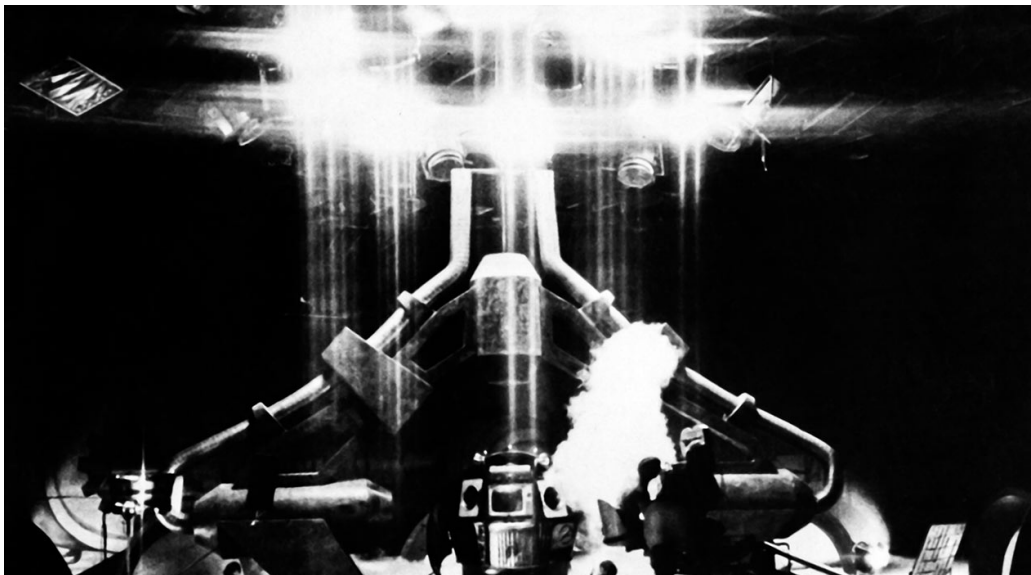
dead end corridor. At first, Ben and Wolf fears are eased when they discover the robot decontaminates them; and it begins to blowing specks of dirt from their clothing and their pockets.

To create the robot, ILM incorporated a full-size live-action stop-motion model. "We had a large specially the front facade of the robot —with working the arms that frisk the kids," "They had a video monitor to see what the robot would also direct them. The large robot was made of plastic and wood and was filmed by boys. Parts of interior sets used at Paramount action scenes were reconstructed and used. This version was approximately ten feet long. Individual mechanical arms were built for the scenes in which the arms frisk the boys from their pockets.

For wide-angle shots of the robot first entering the enclosure and chasing after the boys, stop-motion puppets were built. "The mini robot was about sixteen inches in diameter," "Dov Kanner's spider robot was about nine inches in diameter with spider-legs that extended outward so that it could fit into the corridor. Tony Laudati animated the robot. Pat Sweeney and Toby Heindel. For one scene, the boys running away from the spider, the boys were filmed against a bluescreen with mirrorplex underneath them so they could be put into the corridor easily. feet were made of a mirrored plexiglass material that was used in sequences in *Indiana Jones and the Temple of Doom* and *The Indiana Jones* into the scenes of him running away from the water."

While Ben and Wolf are encountering the robot, the boys are sliding down into a dream room from which the alien dreams to the boys. "At first we thought of bubbles floating around in the air with dust," "but then Joe decided to do an experiment. The sequence involved three shots of the approach of the robot. They pulse on and off as Darren is lured into the room."

Eventually, the three explorers are reunited with their bizarre hosts — two somewhat goofy-looking boys, Neek, who discovered earth when the robot and the alien transmission. We



While de-germing the Thunder Road was a pretty straightforward chore, the three explorers proved a little trickier to chase down. A huge spider robot entrusted with the job ultimately corners two of the fugitives. A full-size spider section was built for the sequence and photographed during postproduction at ILM. / A less menacing version of the mechanical creature was painstakingly animated by Tony Laudati using traditional stop-motion techniques. / Wolf's and Ben's desperate flight down the vast dome-lighted corridor was actually a successful optical composite utilizing a miniature set and robot combined with bluescreen footage of the boys photographed on mirrored plexiglass. / Modelmaker Bill George maneuvers the intimidating, yet harmless, probe he constructed to examine the terrified astronauts. / Joe

started laughing I decided, 'Yeah, I'm going to do it.'"

Picardo agreed to play the role, but only after Bottin promised to find some way for him to see from underneath the makeup. Bottin had originally thought the answer would be found in the creature's numerous skin folds—with the two eyeholes hidden down a deep groove between wrinkles. However, when the wrinkles were ruled out, he was forced to come up with another solution—freckles. "Freckles afforded pretty clear vision," Bottin said. "It was like a camera looking through a chain link fence and the focus is on something in the distance and the links disappear. So when Bob looked through the freckles he had something of a pattern over his eyes, but pretty good vision." In addition, freckles also helped fill in the area on the alien face between the actor's lips and the extended eye stalks. As for the problem of blending the mask with the body suit, the solution came from costume designer Rosanna Norton who devised what were referred to as the 'outerspace purple hotdogs.' These necklace-like appliances went around Wak's neck and covered the break between the head and the body parts of the suit.

Once a final design was approved in miniature, Bottin and his crew worked to bring it up to full size. After considerable renovation—"The couch potato started out with a head the size of a Flintstone's boulder, and a body so huge it would have taken ten guys to lift it," commented Bottin—the final design was completed and approved and cast out of foam rubber. The head involved two essential pieces—an appliance that covered the area of the actor's face, and the mechanical head that was placed on top of the actor's to extend the face of the creature up above that of its performer.

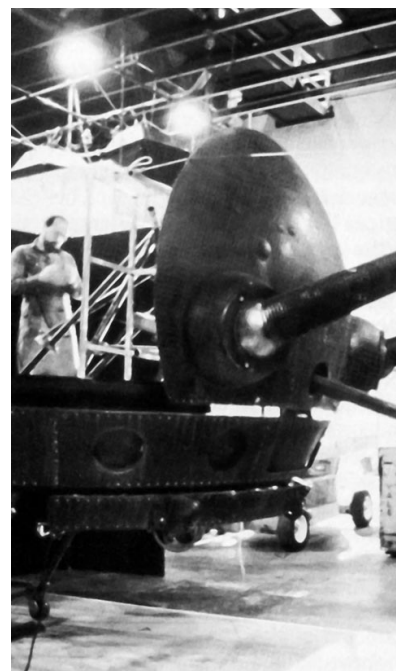
Like the head, the completed body suit was cast as a one-piece mold—body, arms and feet included—by Gunnar Ferdinandsen, and had to bake overnight and well into the next day in order to cook properly. It was made out of foam rubber on the outside, with urethane foam on the inside. To lighten it up as much as possible, portions of the body's foam interior were taken out.

When the suit was completed, Picardo was asked to try it on. One problem became immediately apparent—because the rubber suit was so heavy, the alien's chicken-like posterior tended to sag down towards the floor. The solution once again was discovered by Rosanna Norton. "Thank God she was on the movie," said Bottin, "because she immediately looked at the suit and came up with an idea for what became known as 'The Big Diaper'—which was a harness inside the suit that Bob had to put on first. Basically, it was held up by his shoulders like a backpack and, by using buckles and canvas running up into the

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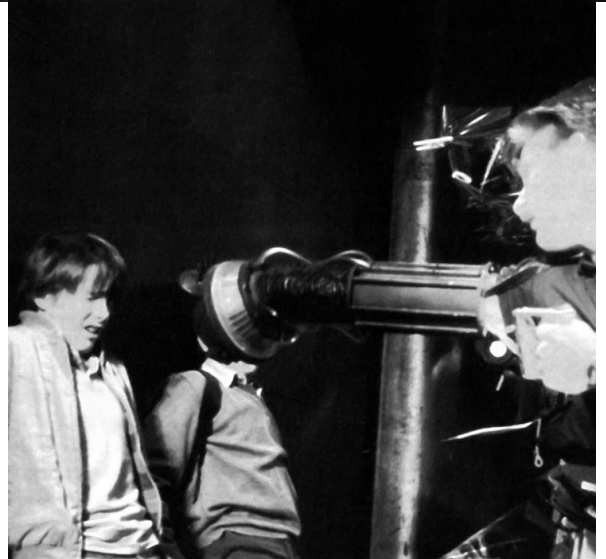
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A huge spider robot entrusted with the job ultimately corners two of the fugitives. A full-size spider section was built for







filming the earthbound interiors before the alien spaceship. Despite the incredibly haunted all aspects of the *Explorers* prosthetics themselves were essentially completely needed on the set, although last-minute addition of Norton's purple hotdogs made when new problems presented the any makeup design, once the elements the most difficult part was the appliance Wak took about fifteen hours on the first day. He had expected this and, once the process of time to completely suit up Picardo did five hours.

"My day would usually begin with Vito putting a bald cap on me," Picardo recalled. "Then Laura Filip would each put on one of the suction-cupped first appliances was like a glove with the fingers put Wak's fingers on the tips of my own. Then the glove down over these and glued at the joints. After the arms went on and the face they would put the body harness on me and a cable junction box on my back disguised as Wak's backpack. Once that Laura would begin applying the face appliance."

The face and head of the alien were essentially the mechanical head with eyestalks tilted on its own head, and the alien face which was the actor's face. The appliance was put on the face and could be glued down, it had to be lined up with the actor's head. Even though Picardo would wear the appliance only while filming, the appliance would be on his face all day and the two had to be aligned perfectly to ensure that they would blend together. The face covered my whole face except for the mechanical head with eyestalks was lowered on the side of the face and the part that was glued to my face was the base of the eyestalks — which were part of the face. As a finishing touch, K-Y jelly was rubbed on the mechanical head to give the whole thing a natural look.

The fully-mechanical head weighed fifty pounds. It took up to fifteen cables to operate the eye movements, the left and right eye turns and the ears. Added to that were the character's emotions, such as when Wak could contract downward to cause his face to look down. They could also be extended upward by something. On the side of Wak's head were the tweeters that flipped back and forth. "The ears and the ears moving and the stalks moving to bring more life to the dead ones."

The sculpted heads of Wak and sister Neek receive finishing touches from sculptor Henry Alvarez and assistant Tamara Fites. Foam rubber castings were produced from the completed sculptures, resulting in two essential sections — an appliance that covered the actors' faces and a mechanical face-extending head piece. / In the immense shadow of Wak's portly profile, Alberto Revilla adds sculpting touches to the lower legs. Wak's already-completed polyfoam feet were used as reference when applying wrinkles. / Actress Leslie Rickert good-naturedly suffers the indignities of getting plastered by master moldmaker Gunnar Ferdinandsen as lead special makeup artist Vincent Prentice offers moral support. / To remove the clay from the rigid understructure upon which it was sculpted, water was funneled into the join areas.

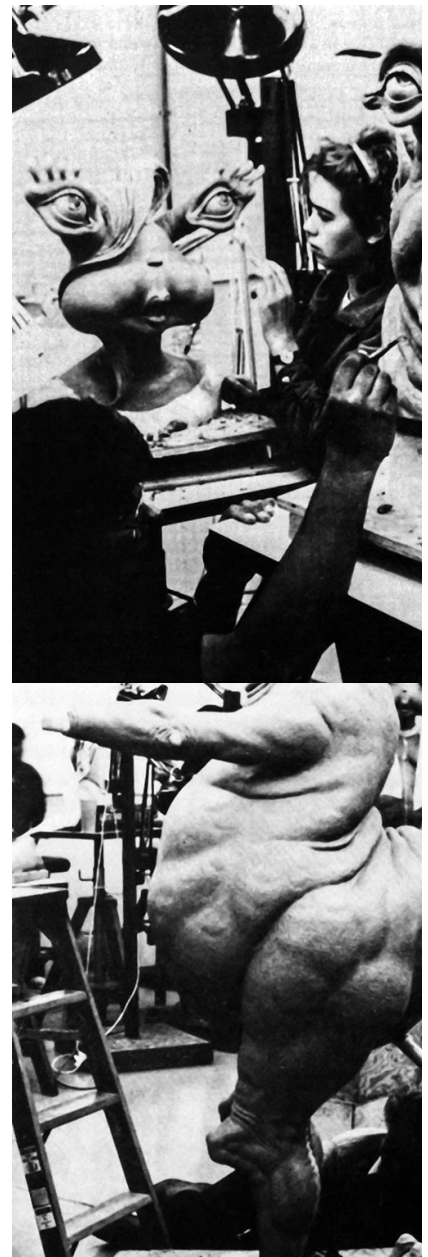
Once the pieces were

the set at Paramount. We filmed it by first shooting the bottom half of the frame — the live-action set — with the camera locked off and the top of the frame masked off. Then the painting was put in on top of the live-action as a latent image, and in optical we added the tilt from the top half of the frame, down to the bottom half of the set with the characters. We were able to reduce the whole shot about twenty percent from full frame to standard 1.66, which would not be as good as going from full-frame VistaVision, but we figured it was worth it for this one shot to get the extra camera movement. The whole shot was risky but the results were so nice it was worth it."

On screen, the boys appear to be surrounded by a myriad of floating television images, some large, some small, some close by and some far away. A large rear-projection screen built into the set was the source of the images located directly behind the actors, while other images were projected onto a ghost glass that cinematographer John Hora had placed in front of the camera. Still other images — clips from various movies, television shows and commercials that Ralph Winter had transferred from their original formats onto video — were superimposed optically during postproduction.

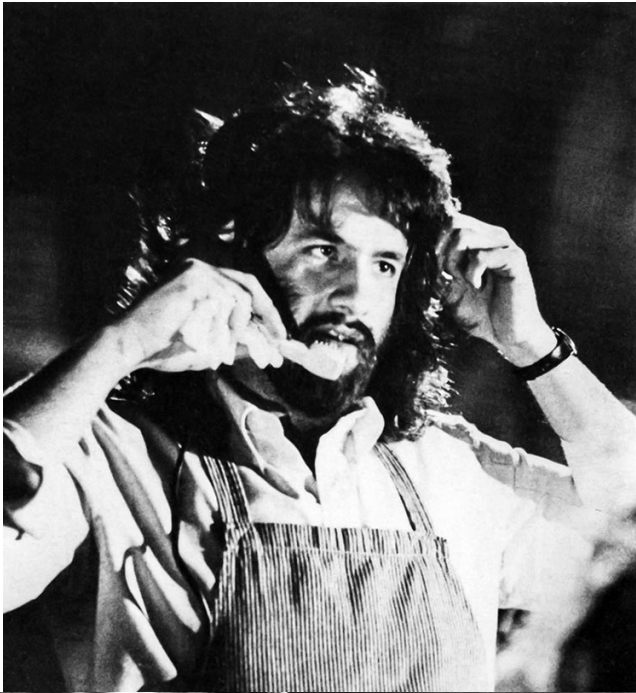
The explorers' visit with their new-found friends is abruptly cut short when an immense spaceship many times larger than the one they are on suddenly appears in their quadrant and swallows them up. The earthlings soon learn that this ship belongs to their hosts' father, and that Wak and Neek are actually kids who have helped themselves to the unauthorized use of their father's space sports car. While obviously from the same culture as the outerspace siblings, the father's ship was inspired by something other than a dragster. The origins of its design allude to a scene earlier in the film when Darren tells Ben that his father hauls junk for a living. "Because of this," Rodis recalled, "Joe said, 'Nilo, why can't we do a junk truck?' And, if you take a look at that hulky, massive-looking ship in the film, all it really is is a flatbed truck without any wheels. One weekend, I just decided to draw a very loose drawing of a truck, and I soon realized that the more modern a truck it was, the less fun it was. So I started to draw like a 1920-30s truck, with a separate front fender and a really huge flatbed in the rear. I gave that to our model shop supervisor, Ease Oweyung, and he transformed it. I just told him to make sure that in the end it kind of looked like a flatbed truck." Oweyung thus created the final design, in the form of a five-foot detailed model which, like the space sports car, was filmed against bluescreen.

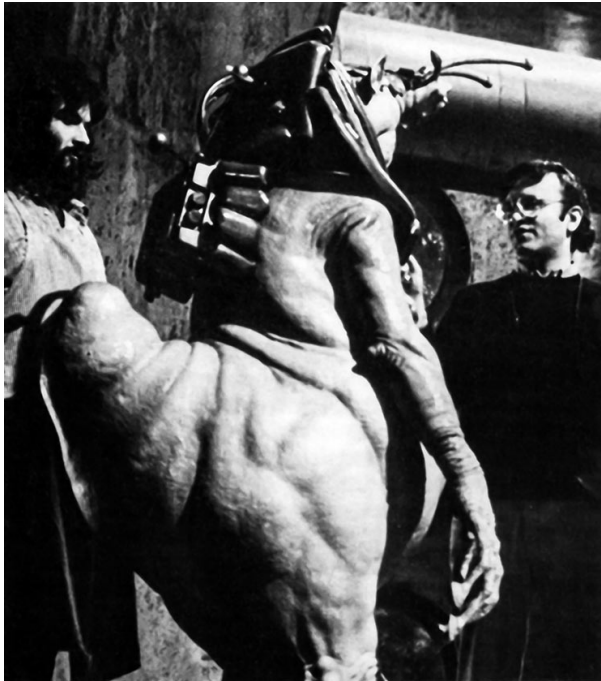
Like Wak and Neek, the father was the creation of Bottin; and if Wak seemed to require an enormous suit, his father demanded an even larger one, with a head that featured hands and arms on top instead of antennae. As a result, the mechanical head for the father was supported from behind by a metal brace. This enabled the actor — once again, Riccardo — to place his own head up











zillion pounds and was hot, and the head piece alone was enough to make you gasp. He would get up early and spend all day in the makeup and become worn out — and *then* he would come out and have to be on. He would do take after take after take; and at the end of the takes, he would do this flourish and this big booming-voice reading, and then I would yell cut, and he would almost fall over. Every time Bob does one of these what he calls 'rubber shows,' he says he's never going to do one again. And I certainly wouldn't blame him. This has got to be one of the hardest things he has ever done."

In addition to the antennae hands and arms that adorned the top of the father's head, Bottin conceived of several other anatomical differences to distinguish an elder couch potato from a younger one. "The father's fingers were not like Wak's, but real stocky — like polish sausages with suction cups on them. I thought that worked out really well. We also wanted to give him a conservative crew cut, but we realized that it wouldn't even register visually because he is only on for a few seconds. So what we did was part his hair down the center and make it look like a very old-fashioned kind of haircut. We also punched in hair on his face and trimmed it down so it looked like beard stubble. It really made him look like a redneck construction worker." The father also wore alien overalls and a tool belt to further strengthen the notion that he was an interstellar blue collar worker.

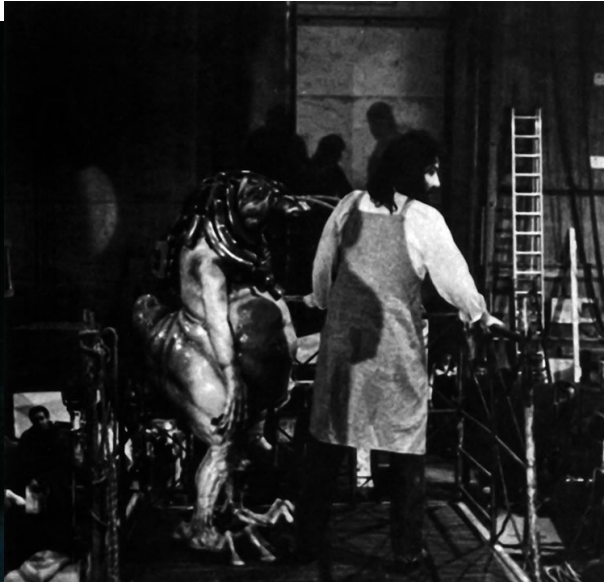
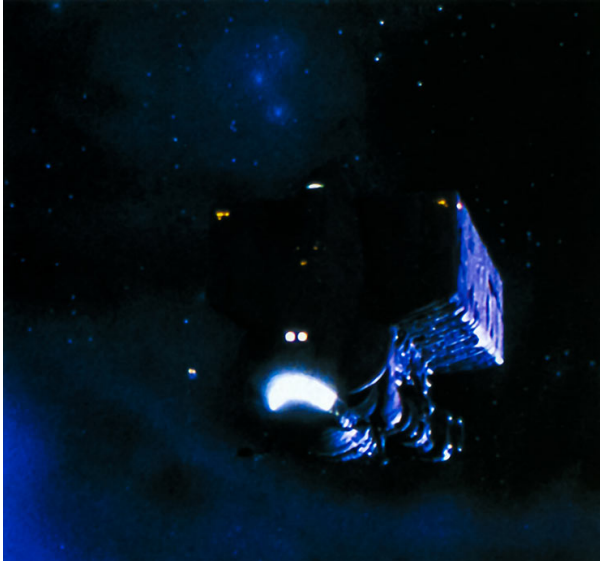
While Wak and Neek were filmed over several weeks, the father was lensed in only three days. For his first appearance, Picardo had to walk into a small-scale set of the landing bay and tower over his misbehaving children — actually the camera was set below him and angled up. For this scene, the actor was able to wear a dummy head that had antennae arms connected to springs so they would bounce and move around automatically when he walked in. For this scene and others with the father, Dante told Picardo to act angry, as if he were screaming at his kids. In the final film, the father is actually speaking a bizarre 'alienese' — courtesy of sound effect editor Mark Mangini — but for the sake of the action, Picardo ad-libbed his own English lines on the set. And the lines brought the house down. On that first day, he came roaring through the landing bay door, stopped, and screamed out: "Where the hell have you been? I was sitting at home with your *fat* mother watching *Dynasty* and I said: 'Where are the kids? Where the hell are the kids?!'"

With Dad's arrival signalling an end to the intergalactic party, the three explorers are returned to earth while Wak and Neek are taken back to their home and no doubt grounded for at least a week. For Ben, Wolf and Darren, returning home is a sad affair because they believe the greatest adventure of their lives is now behind them. But safely back in school days later, Ben starts studying a curious pendant given to him by Neek and, suddenly, all three of the explorers plus Ben's girlfriend Lori find them-

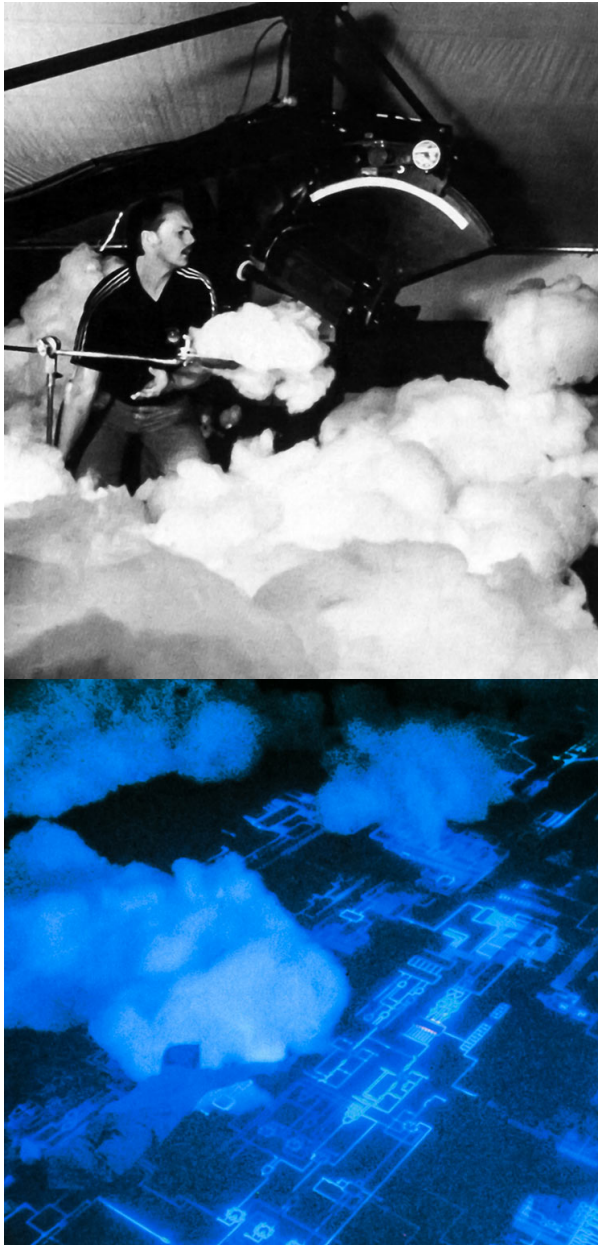
In the ship room, Wak get to know aliens' dis of earth ar has been / intercepti television the confus hilarity — Headset in directs a s operators. remained off-camera their move including the creatu expression antennae - video mon discusses script's dr. with Rotti



CINEFEX







main cloud layer, model clouds were placed on black velvet to give them that flat bottom look like they are part of an inversion layer — like a sea of clouds, with an occasional break in the sea to reveal the computer landscape below. We also had some clouds suspended up above this main layer, which were attached to pieces of plastic or netting held up by C-stands covered with black velvet. The additional floating clouds gave some dimension to the set."

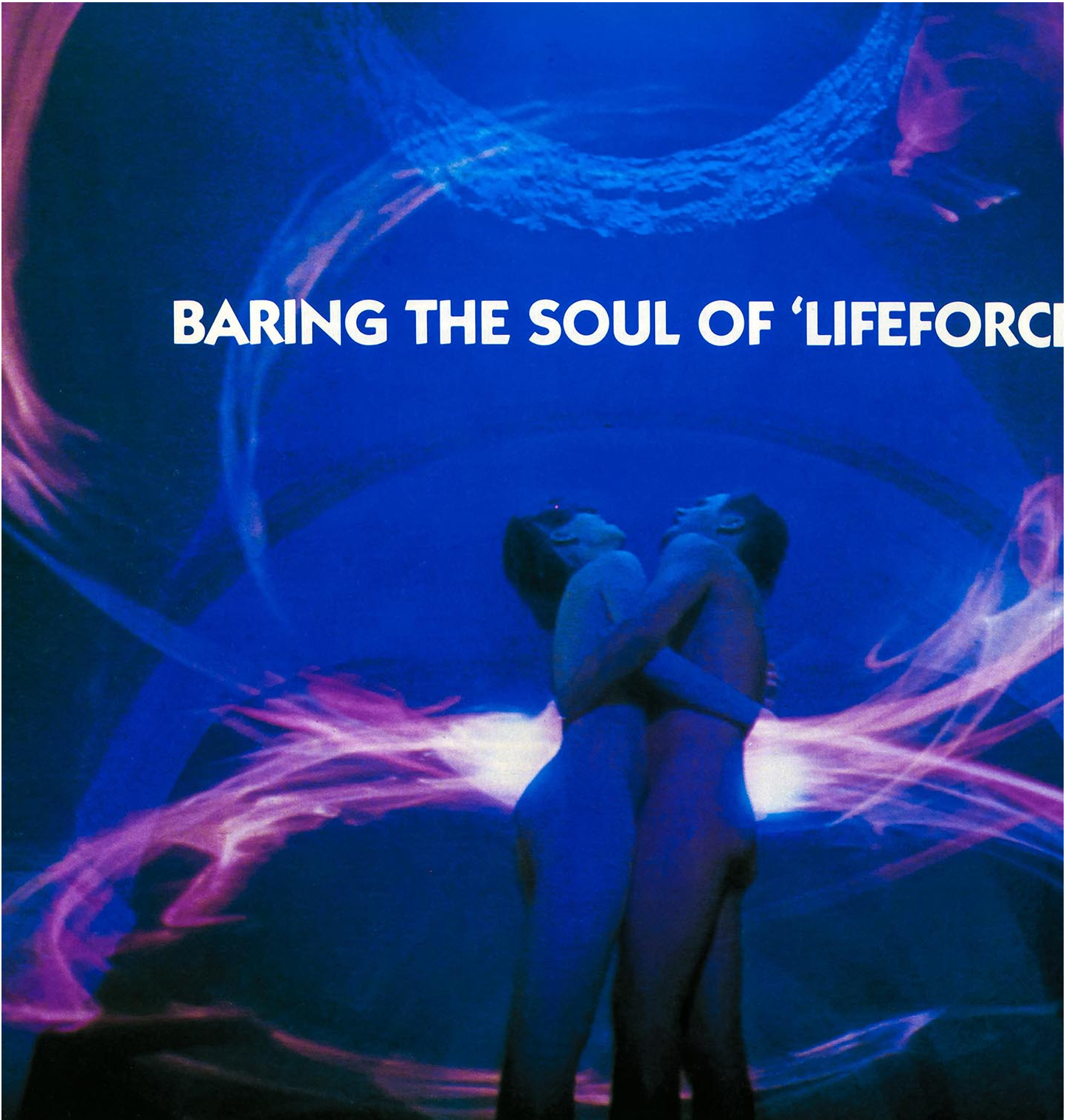
Originally, the cloud set measured approximately sixteen feet square, but it was eventually expanded to sixteen by forty feet, thus providing enough clouds to track over at the desired speed of movement. The look of the cloud set was enhanced by fog filters placed on the camera to create a greater sense of atmosphere. "We were trying to get away from the dry ice look of things," Dow noted. "Also, our clouds were mostly cumulous-looking; and we didn't want movement in them as such because we found that when you go up in an airplane, real clouds don't appear to move that much — they look pretty stationary." While dry ice was not used in any of the shots of the clouds, a liquid nitrogen element was photographed for the dissolve at the beginning of the sequence when the camera moves up through the cloud layer. In that shot, the frame goes white for a split second and then the point of view appears to be coming up out of the cloud bank. (Originally, the first two dream sequences were to contain only POV shots. But when preview audiences expressed confusion, some last-minute scene-shuffling was effected. Hence, the cloud passage — designed for incorporation into the final dream — eventually ended up in the first, preceding a similarly uprooted shot of Ben flying through the skies.)

Besides making good use of foreground and background shots in the sequence, ILM's efforts to create a believable-looking flight were aided by a decision made early on — the sequence would be set against a dark blue night sky. A bright light source like the sun would have required that the source be matched perfectly in each shot. "We thought by having a moonlit night we could use a soft key light that we could easily maintain continuity with," Dow explained. "We also felt that with a weak key light, we would be able to get by if it didn't always match just perfectly in every shot."

For all concerned, creating the effects for *Explorers* proved to be a race against time. "On *Gremlins*, we had a year of preproduction during which we made another picture, and a year of postproduction," Dante recalled. "On *Explorers*, however, we had about three months. We all ended up working seven days a week trying to get the picture to be as good as it could be in the time that we had. Everybody was knocking themselves out — people like Ralph Winter and everyone at ILM, Omnibus and Rob Bottin's shop — making it incumbent on me to try and find a way to make the picture turn out to be pretty good." The end

After returning from earthbound, offered a n from the t classroom Ben's girlfriend, Peterson) - shared dre Bluescreer airborne a on maneu was recor control tec giant light Huston an arrange an kodoliths represent computer landscape / Effects c Dow posit fiberfill c the flying against bl exposures, cloud bani with fog fi additional

BARING THE SOUL OF 'LIFEFORCE'



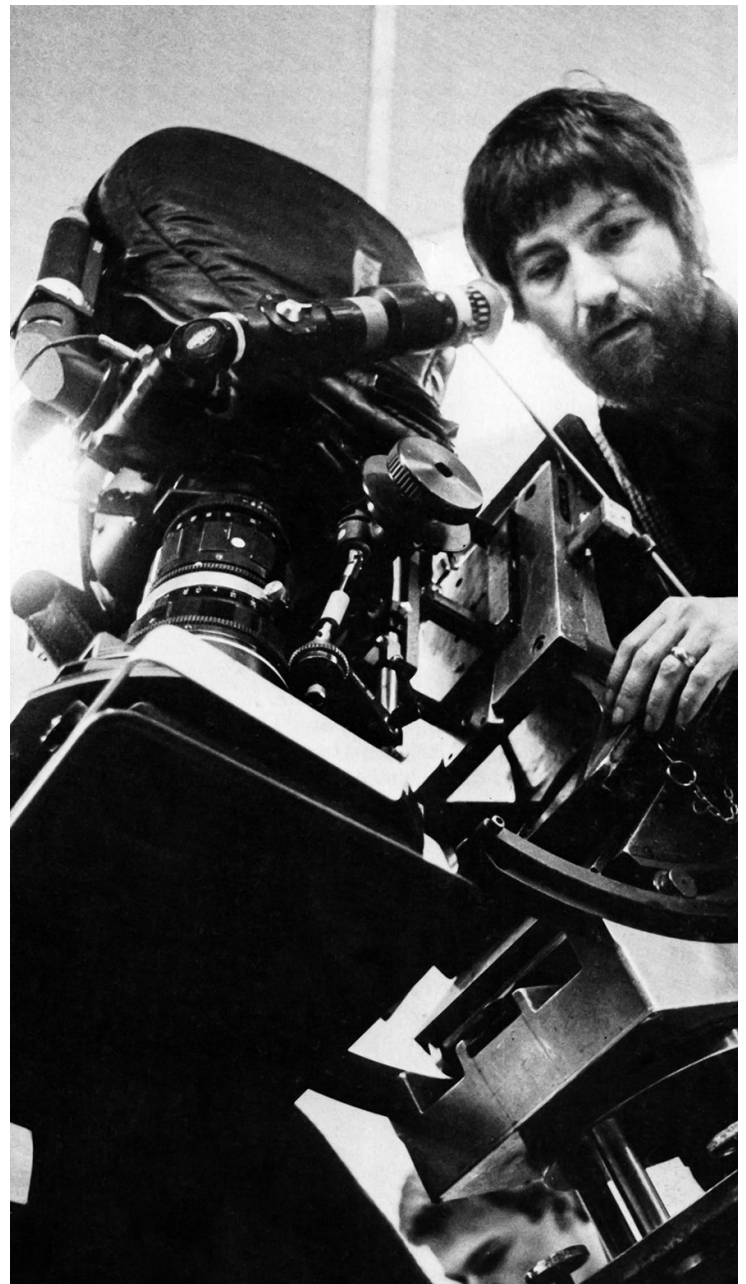
image," Gredell commented, "and make the laser light bend with a certain arc of curvature and speed—and do it in a practical, repeatable manner. But the effect had to match the live-action, and *that* got to be a real challenge."

Painstakingly aligning the spheres and tracking the 'A-to-B' streams with the X-Y-Z axis took many hours and many pellicles. The devices were subjected to tremendous force by the puckering and tracking of the spheres, and tended to lapse into a flaccid state after a day or two. Fortunately, they were easy to construct. The heat-shrink mylar was simply stretched over a rigid aluminum frame and heated, which pulled the mylar extremely taut. This eliminated all distortions and made it a tough, but flexible, surface that could be altered by the spheres. The harder Beck pushed the sphere into the pellicle, the greater the curve the 'A-to-B' would arc around.

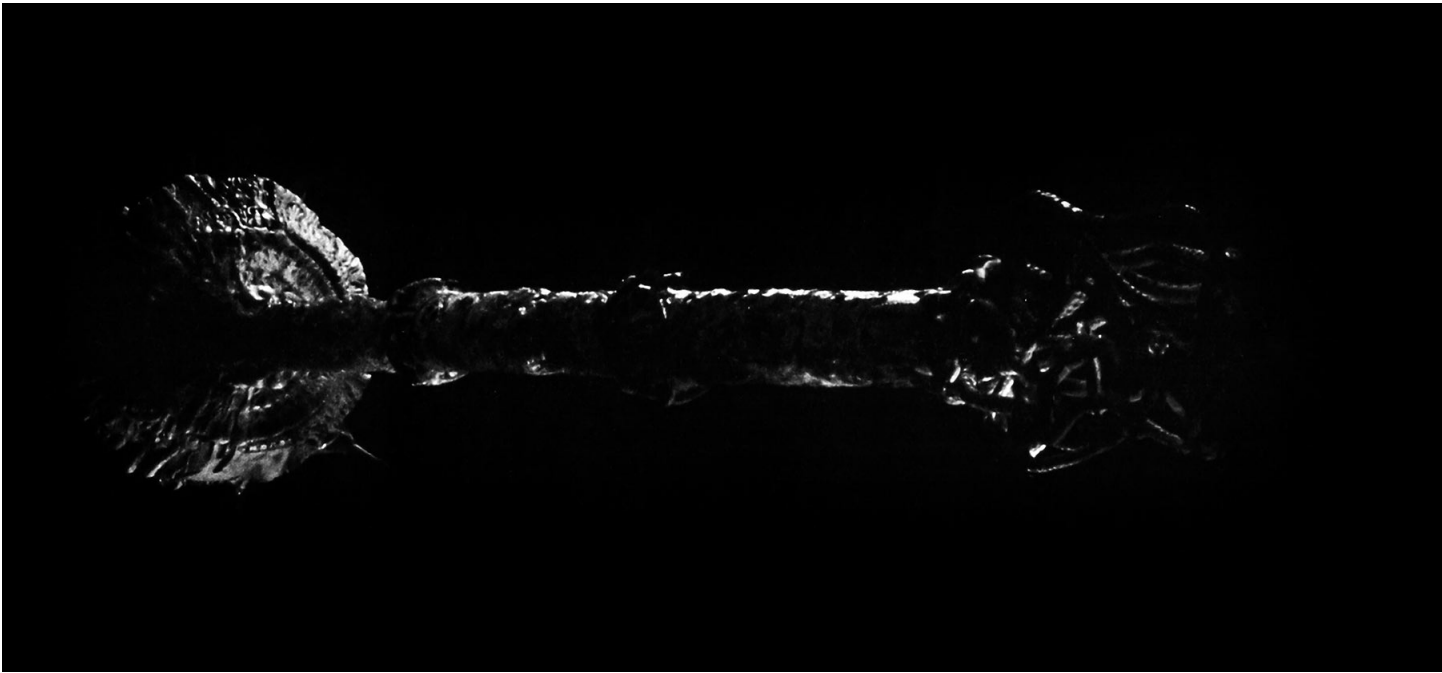
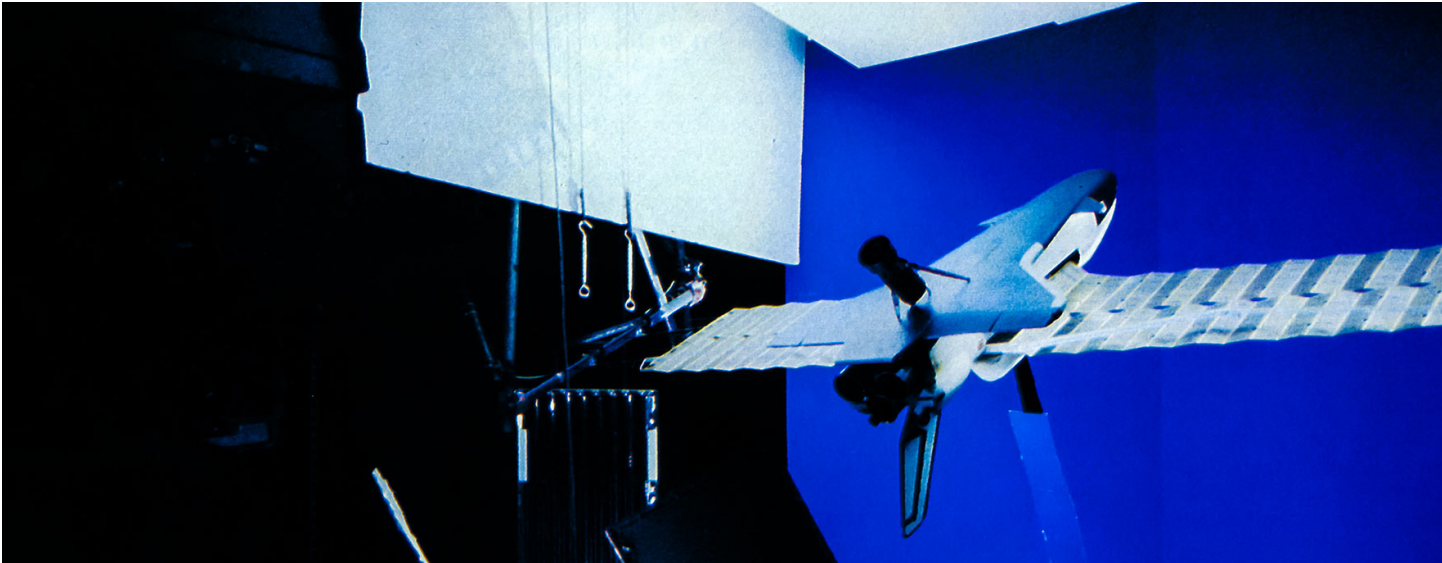
Despite the drawbacks, Gredell found the system to be an innovative boon. "Although using lasers is not a new concept, I've never seen these same things done before in any other film. It was a very unusual application, and probably the most cost-effective use of lasers yet in movies. We worked twelve hours a day and turned out literally thousands of feet of very interesting optical effect plates. If they had been done in animation, they would have cost a fortune and probably taken five to ten times longer to do."

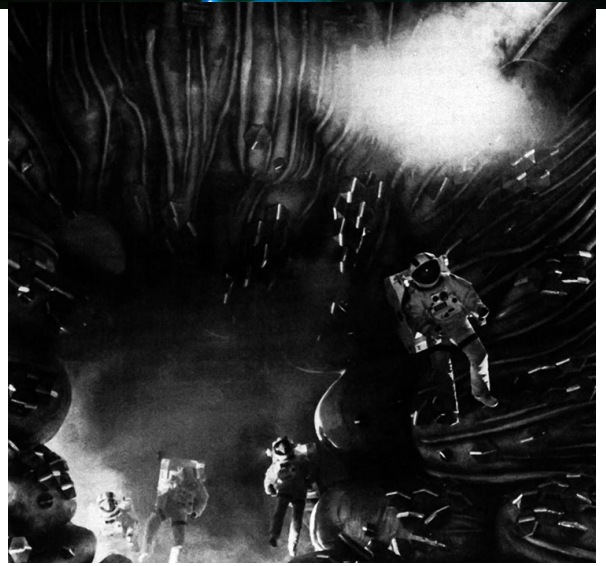
Production coordinator Caren Marinoff echoed the sentiment. "John Dykstra had always *wanted* to use lasers for the 'A-to-B' effect, but it also proved to be more efficient. Besides being cost effective, it gave a better look and took far less time on stage to produce elements than any other technique available. John even began to coin terms to distinguish the unusual manifestations of lifeforce from traditional effects. There was 'closeup A-to-B Lifeforce,' to describe the animated energy passing between two people. Then there was just 'A-to-B Lifeforce' for long shots of the same transference of energy. Those shots were augmented with the 'poptarts' effect, which visualized the loss of the soul. Tobe's actual interpretation was of the lifeforce as living energy and the poptarts as the actual soul being lost to these vampires. It was important to him for the storyline to show these white balls of energy being released. Along with the poptarts, there were a dozen shots of a 'bolt' — a very bright, large ball of light. It was supposed to represent one of the vampires flying around London wreaking havoc on everything and sucking the lifeforce out of all the poor unfortunate people. The last major lifeforce effect was the 'solar flare,' which occurred when the two lovers were impaled on the sword."

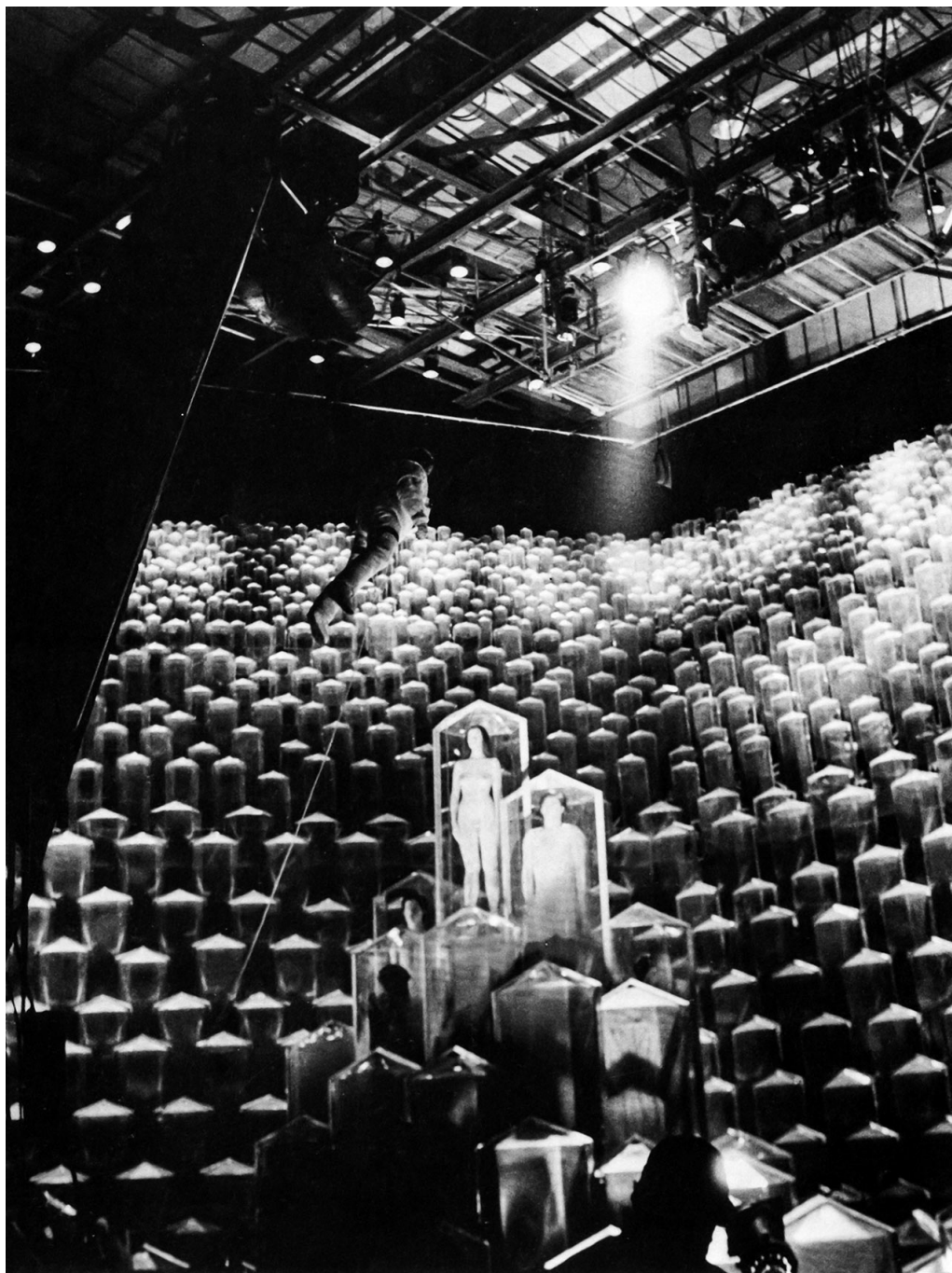
The red solar flare effect was yet another variation of the laser-beam-into-rotating-mylar configuration. John Sullivan inherited the job of photographing the solar flares, expanding on the original laser experiments done by Gredell and Smith. "The solar flare was supposed to represent some form of abstract













camera sat in the middle of it — about seven-and-a-half feet away from the surface at any given point — shooting with a 50mm lens. The trick was that they painted the entire surface area surrounding the ship with blue ultraviolet paint. When we lit the cyc with UV light, the alien ship remained dark while the blue UV paint lit up, silhouetting the ship and enabling us to pull a matte.”

During postproduction, however, when additional model photography became necessary, the fifteen-foot British alien spaceship was eschewed, and a smaller, easier-to-handle version was constructed for use with motion control. Chris Ross tackled the job with his characteristic zeal. “I regenerated the alien ship on a smaller scale, basing everything on photographs, drawings and paintings they’d sent over from London. I essentially built it from scratch and pretty much hogged the job, working alone because there had to be some consistency from one end to the other. Anyway, I loved doing the ‘organic look’ — like *Alien*. The painting technique on it was a lot of fun, going from primer to silver paint, and then going back in with candy apple neon translucent paints. We played up the contrast on the surface development by darkening the valleys and letting the high spots on the model be a bit more reflective. The only thing we could really do to suggest scale with something as massive as this enormous spaceship was supposed to be was with color. If you look in the distance at a mountain range, it’s all pretty much one value, low chroma, low intensity — colorwise, everything gets muted. That’s basically what I had to do with the alien ship — keep all the colors at the same intensity, other than surface embellishment.”

Despite Ross’ effort, the alien ship was still noticeably lacking in scale. Doug Smith commented on the problem. “It didn’t have anything on it to relate to human proportion — the nature of the model design precluded that. But it is an essential part of creating the illusion of size to have a way of relating a model to people. Otherwise, there’s no key as to how ‘big’ it is.” John Sullivan, who photographed the alien models, regarded the ship as one of the most difficult miniatures he’s ever had to shoot. Its particular shape did not conform to the type of photography demanded by the script and suffered from the additional handicap of the story’s requirement that the dormant ship have no internal lighting of even *windows* — one of the best methods to suggest scale on any supposedly-large vessel. There were, however, two design changes Apogee *was* able to implement to alter the physical structure of the ship, and these mechanical and aesthetic aspects involved a bit of creativity on the part of the model shop.

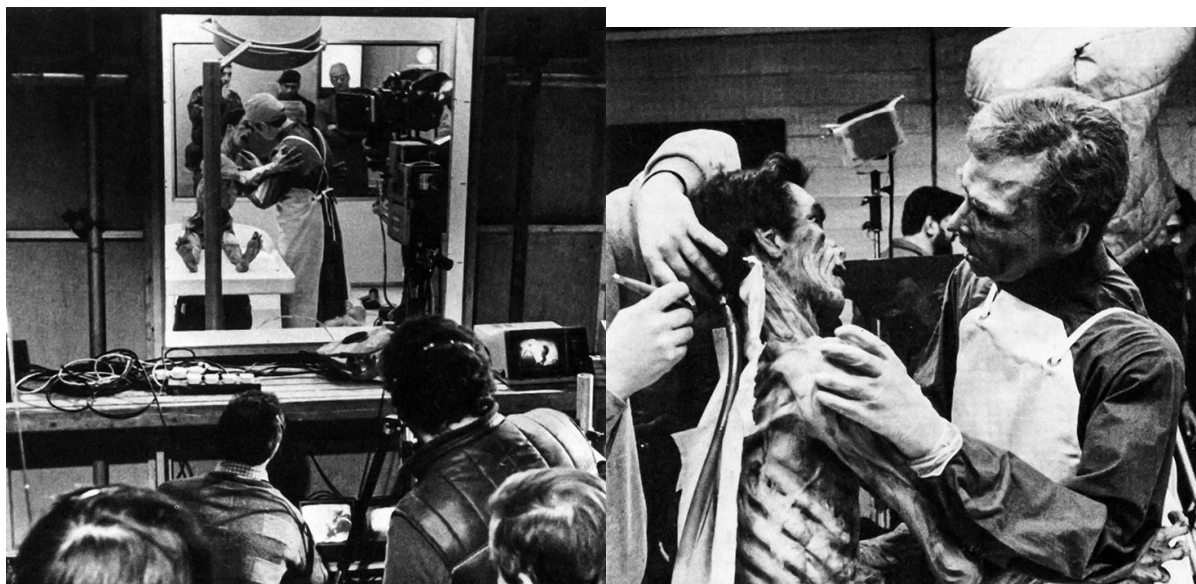


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After some discussion, Dykstra and Grant McCune decided to resculpt the ship's mantle from its original circular pattern into a drawn-back, indented bat-wing style, which not only improved its overall appearance, but achieved a sinister aspect that had been conspicuously absent. Redesigning the appearance of the spacecraft was only half the battle. The script also called for one additional specification — that the mantle open and close like ... well, like an umbrella. The English model crew had provided a functioning mechanism, but one that had not been designed for the precision of motion control. McCune set Tom Valentine to the task of designing a new opening mechanism which would ultimately be constructed by Bill Shourt.

"The armature that came from England," explained Valentine, "started its move from the half-open position to fully-open. So we found it necessary to make another armature that would accommodate the move from the fully-closed position to the halfway point. The British design of the opening device was sound enough, but we had to add a lot of resistance to their mechanism so that it would operate smoothly. It was strong, but there was also quite a bit of play in it. We decided to take a different approach and made a very solid state mechanism with no vibration. It was considerably more compact, but was a very heavy piece of equipment in the finished product. Although it was only moving these delicate-looking fingers, it was actually strong enough to jack up an automobile. The reason for that kind of strength was to enable very small movements to be made very precisely. It's difficult to sell a shot where you're trying to simulate a lot of mass if there's any shake at all in the model."

There remained only one aspect of the umbrella effect to be dealt with — adapting the latex rubber used by the British crew to serve as the skin of the mantle. "We tried to find a material that we could use for the alien umbrella," continued Valentine, "that would stretch throughout its entire range of movement without splitting or sagging. We started by continuing where they left off in England, with latex rubber. We tried several methods of building up a thin latex skin with different mixtures of latex, but eventually gave up on it. It was like putting a huge rubber band around the entire umbrella — the latex was holding back the mechanics of the British mechanism and tearing off at the arms on ours. It was Grant who finally came up with the idea of taking the entire alien armature in its bare frame and mounting it in such a way that it could be spun while we shot on a

The Lifeforce ensemble of modular latex figures featured oversized dummy Nick Maley articulated several use film — utilizing cable and 1 By keeping action, as a referencing video monitor cable operation give the ship victim all that needed. / A technician figures — one of the lifeforce-driven decomposing mortal can hapless pass lifeforce. The puppet was air- and liquid capable of deflating o



Modelmakers Smokey Stover, David Beasley, Michael Joyce, Tom Rudduck, Nell Snidecor and David Scott joined in to complete the construction of the models, and Ken Swenson cut windows for the shuttle out of glass instead of the customary plexiglass. "Although plexi is much easier to fit, form and work with," explained Stover, "it would have been much more trouble later. We wanted to paint the ship without worrying about masking the windows anymore. With glass we could scrape the paint off without ruining the surface, so Chris Ross, Tom Pakk and Grant McCune had a lot of fun with the paint job." The shuttles only required one final touch—the application of miniature tiles on the heat reflector shields.

In a surprising parallel to the real thing, the biggest problem with the construction of the shuttle was with the tiles on the heat shields—a situation resulting from the incorrect sizing of the tiles on the *Churchill's* underside. "There were huge gaps between them, about one-sixteenth of an inch," said Stover. "This is no discredit to the English modelmakers because the sizes *were* specified on the drawings they were working from. It was just that when you could see the finished product in three dimensions it was obvious that the tiles were spaced far too widely. So we removed the lines by filling in the gaps and polishing the surface again. To lay up the parts for the final shuttle model, we had a hard fiberglass mold made. We needed a very light and strong skin so we went with an epoxy lay-up instead of polyester. The skin was around 1/32nd-of-an-inch in thickness and still held its rigidity. It also didn't warp, which was a problem we'd come up against with the polyester."

Once the tile dilemma had been resolved, the model shop descended on the craft to begin the task of mounting new tiles. "On the *Churchill*," said Stover, "they were hand-laid with strips of styrene—narrow tiles that were cut into strips and fitted. Because of all the contours, we had to taper and force them into the curved shape of the model. After that, we'd trim off the high edges with razor blades. On the *Columbia*, we got smart and made a brass-etched pattern, using it like a stencil across the bottom of the ship. By painting over it repeatedly with heavy primer, we built up a thickness in the open areas of the stencil, which became the face of the tiles when you removed the stencil mask."

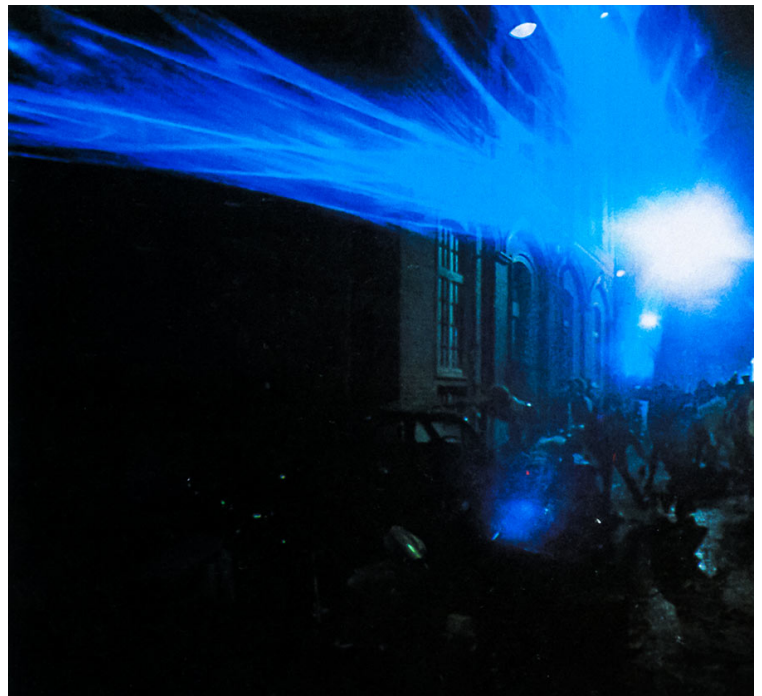
A prominent feature on the shuttle was to be the lengthy solar panels, which were constructed to their entirely-extended position on the ten-inch shuttle and to an eighty-percent-closed position on the six-foot shuttle. The panels were thin brass plates etched with a pattern that had been designed by Marty Kline and rendered by Tom Valentine. Interestingly, weeks later,

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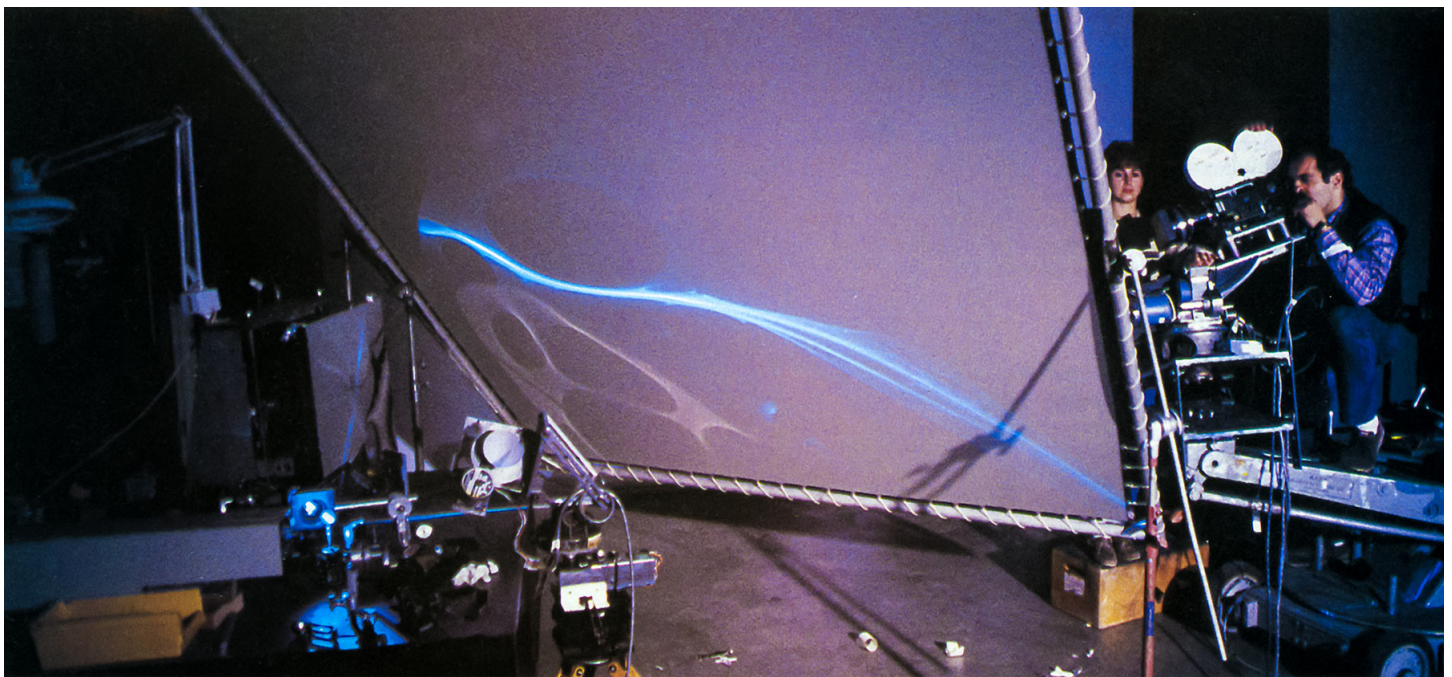
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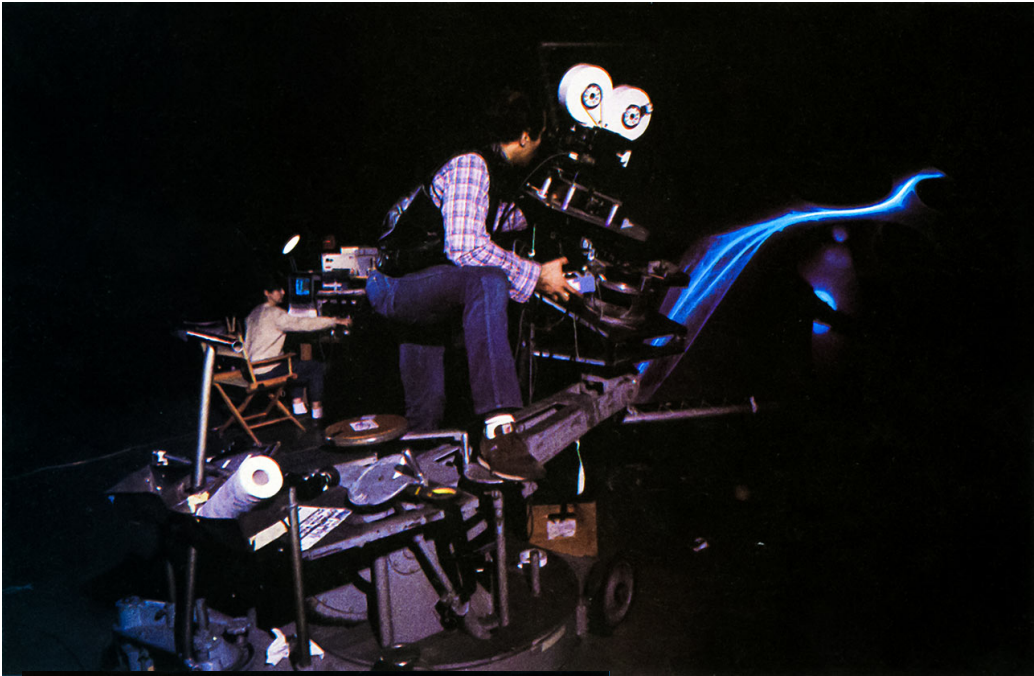
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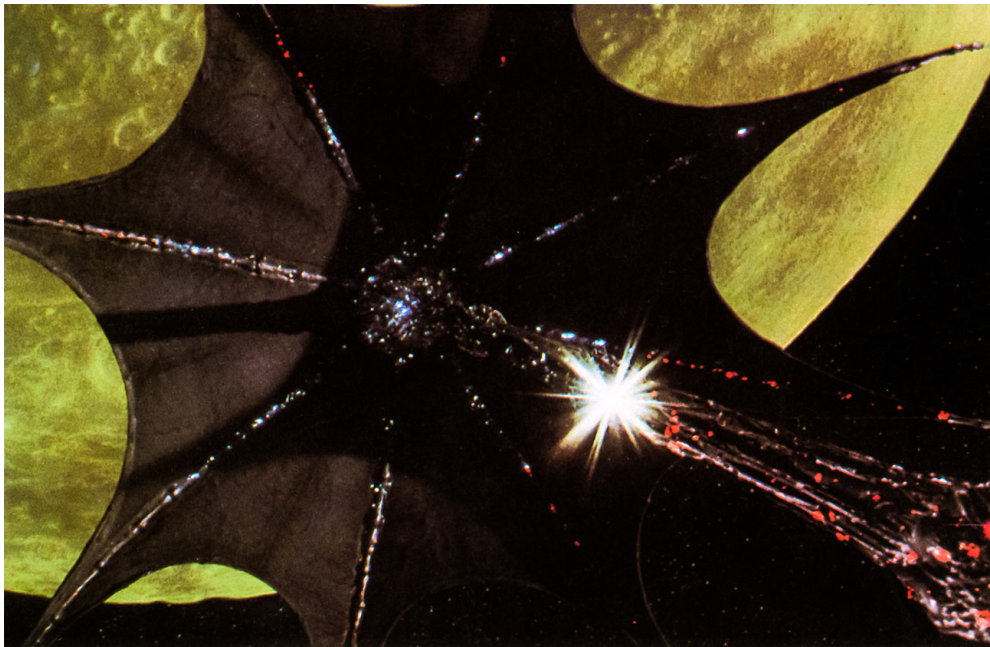
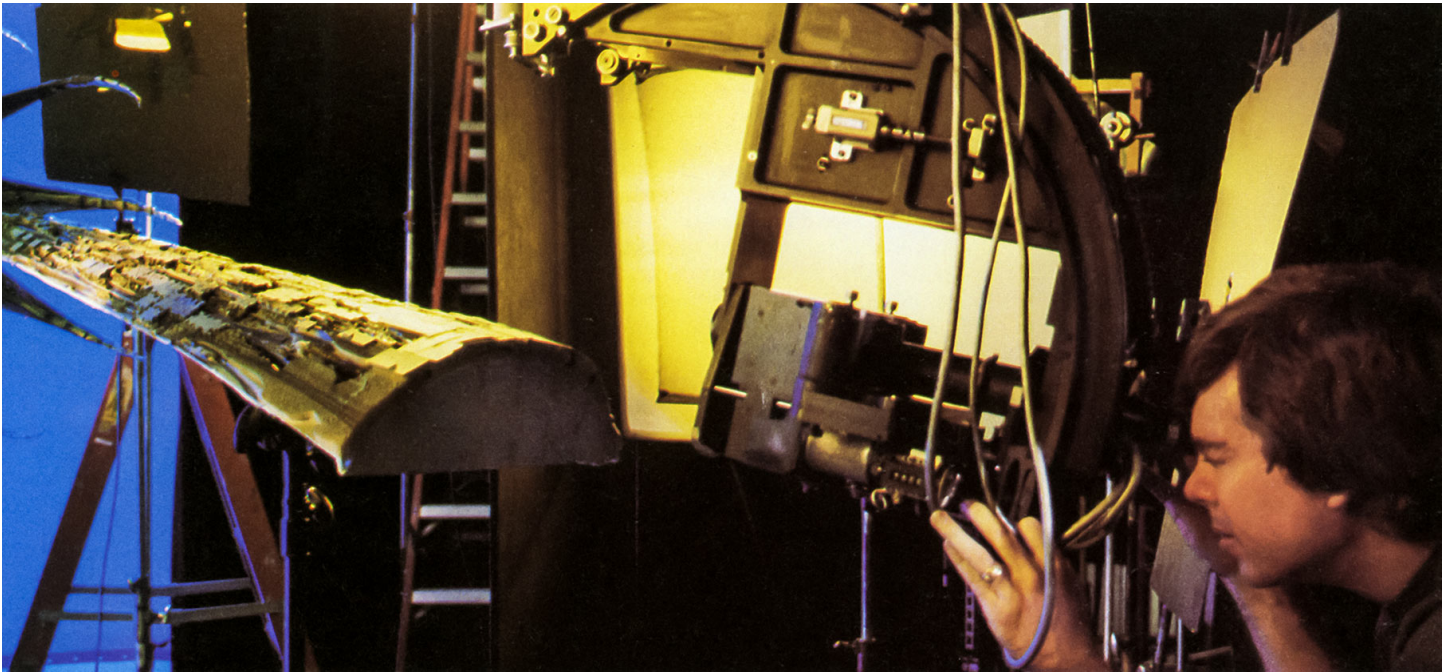


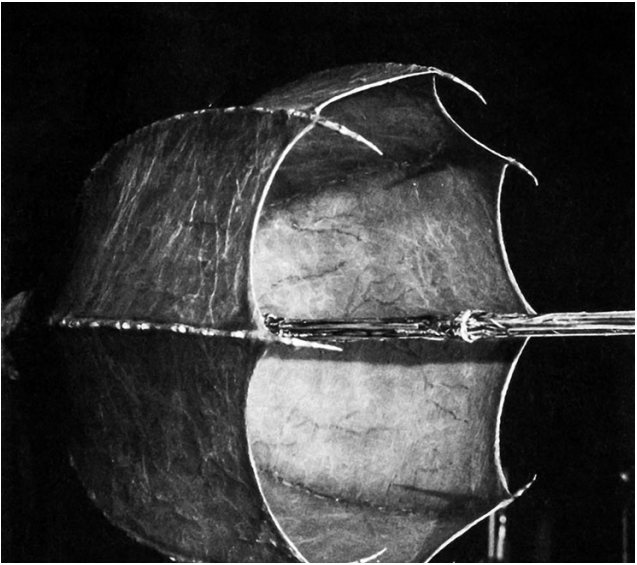
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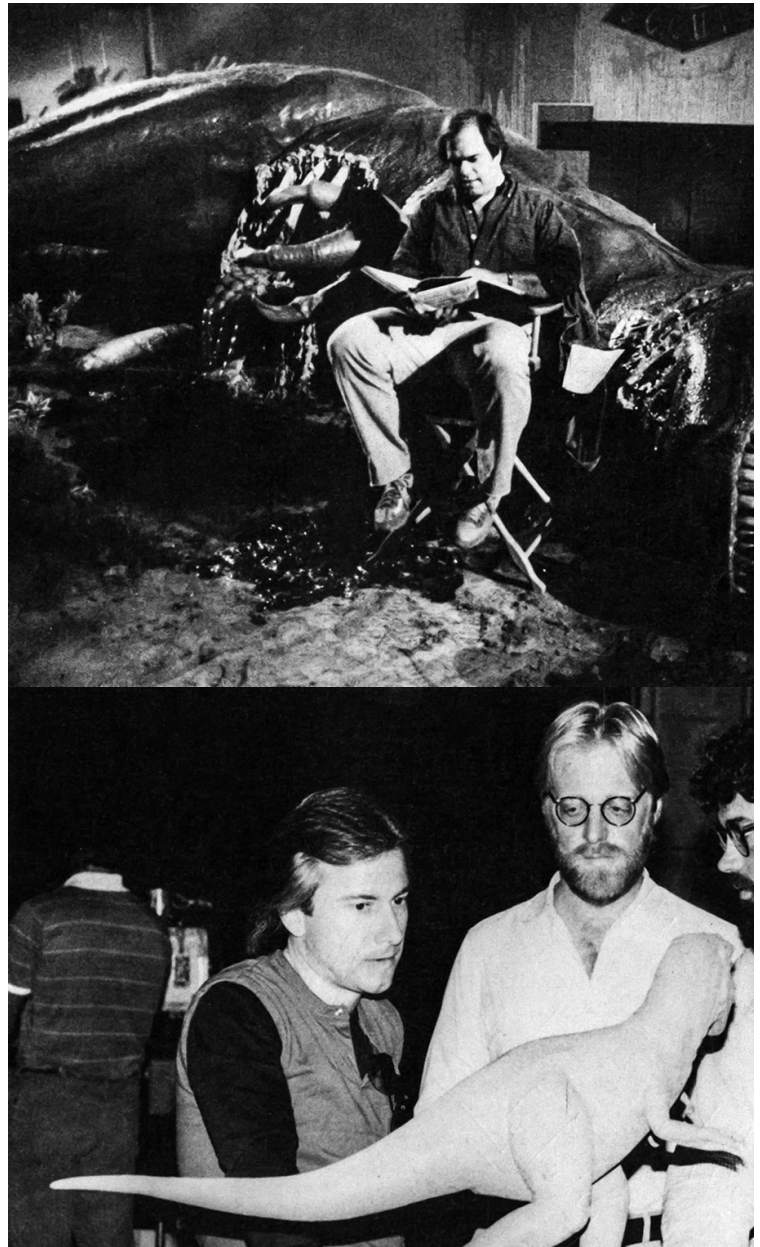
Shooting for an 'A' on
MY SCIENCE PROJECT

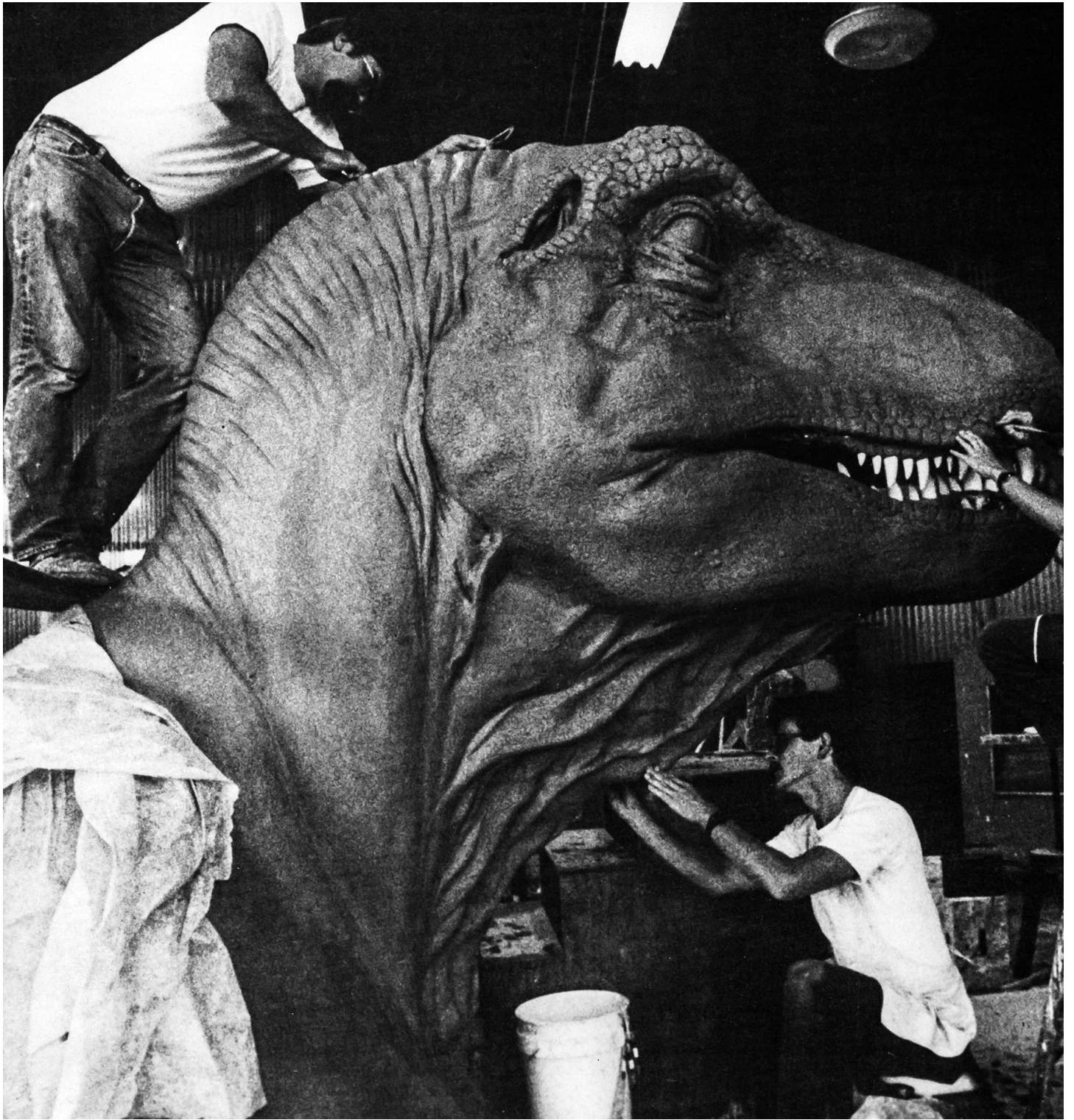
brought it down to make it meaner and more slivery. In terms of distortion and reality, I noticed our choices were similar to those made on *Fantasia*. In other words, we were at the opposite end of the emotional spectrum from *Baby*, a dinosaur only meant to be cute and appealing."

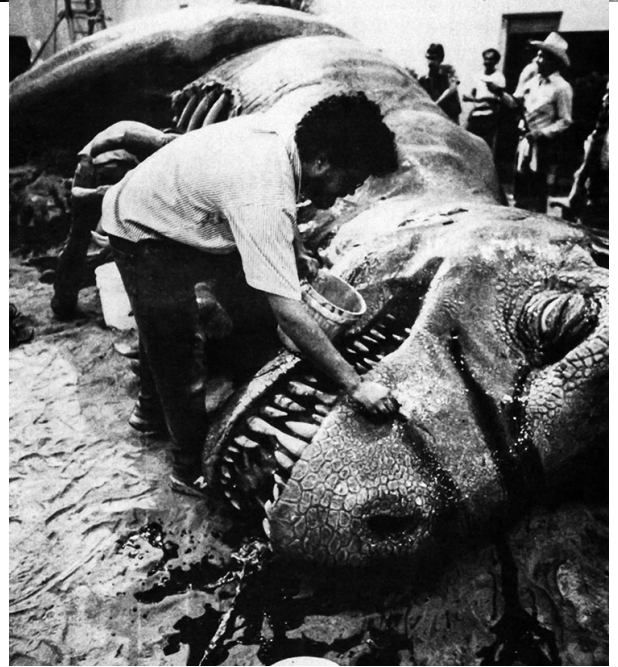
Unlike the other body parts, the tyrannosaurus' head and upper torso section, legs and a mechanical arm were newly-sculpted pieces. The arm was a foam-covered, hydraulically-run apparatus meant to perform the most complex of the beast's relatively simple functions—to lift a terrified kid about to become a dinosaur snack. To ensure Disney crews had realistic references, Scheele tapped the dinosaur expertise of Jim Madson, who holds dominion over a veritable boneyard of spare parts in Utah. "He sent me out some claws and skeletal references; so again, the mechanical claw and forearm piece was a realistic rendering of how that arm worked—a somewhat opposing third claw, enabling it to grasp, as opposed to the two-clawed tyrannosaurus. The liberties taken meant that it was essentially a realistic tyrannosaurus with a realistic allosaurus arm. If you were to put a name to it, it was probably closer to a gorgosaurus, one of the other large carnivores that had functional forearms. In fact, there were a number of 'tyrannosaurids' of variable description and only known by partial fossil remains. It's just that tyrannosaurus rex in the popular mind has settled in as *the* official bad-ass carnivore, when in fact there were many other variations every bit as 'realistic,' just not as familiar." Ultimately, the mechanical arm only needed the ability to grasp, since the actual lift was done with a levered assist.

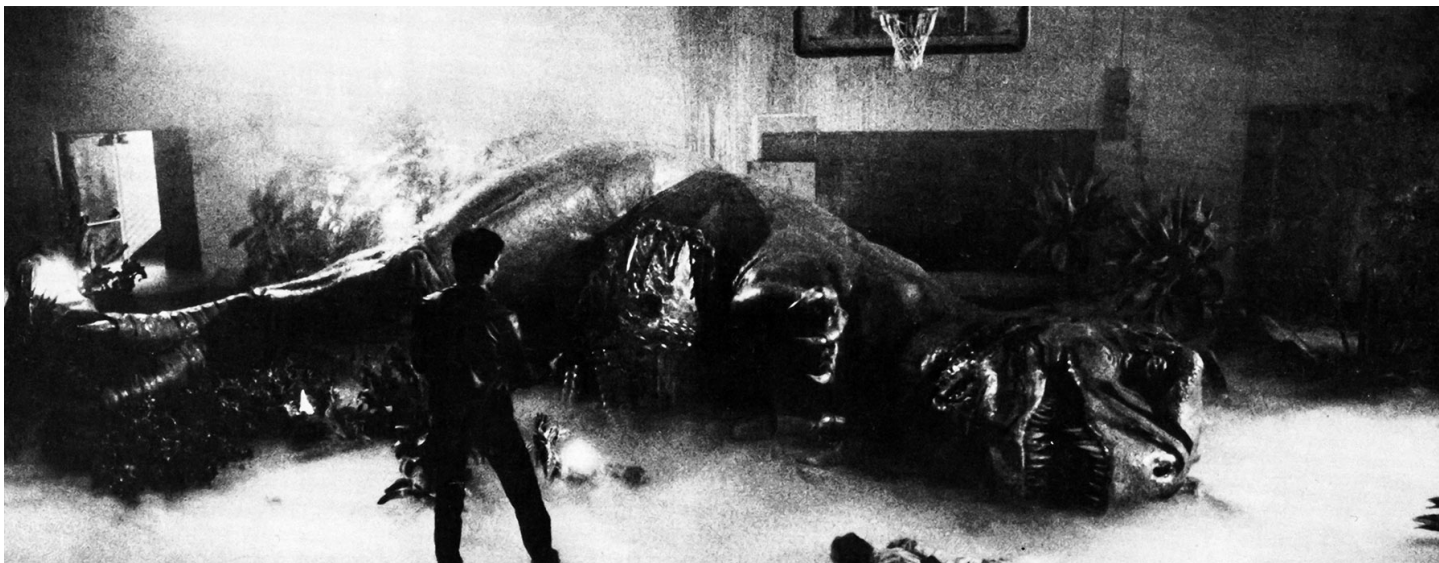
For the cable-driven mechanics on the full-sized head, Scheele and crew took a similar no-frills approach. "The eye blinked and the jaw gaped, and there was an arched metal orbit in the eye, which had a soft skin between its heavier latex folds so that it could close. From the outset, the articulation was determined to be relatively easy to accomplish. We were trying to show a dying, twitching animal with a gaping jaw and a throat breathing its last, not a smoothly articulated motion. There was an off-center vibrator device in the animal so that we could put in spasms and shudders." Once assembled, Disney technicians painted the animal in an overall ochre tint with a mossy green underbelly.

The gymnasium scenes were earmarked for heavy fog and low-key lighting by Betuel and veteran cinematographer David M. Walsh. "As a whole, we were exploiting suspended realism within the film," Scheele said. "The power has been downed in the high school. Everything is either filtered or seen through a kind of 'energy light' suffusing the school as it was under the influence of this time vortex. We established a misty, smoky ambience, so we were free from a lot. We didn't have to put the animal in stark daylight." To further enhance a lush look, the









the speed of movement by simply releasing the cable. To further enhance the realism, Beswick and Notaro devised a brow-furrowing mechanism. Tom Hester cut away a small piece from the brow section. After experimenting to find the right material, Beswick machined a hinge device from nylon-like plastic often used for bushings. The fiberglass piece under the foam. A bolted to the solid fiberglass shell, the cutout fiberglass piece. "We had a little pull it back to one position," said Notaro. By pulling on it, the brow would move toward the eye. Letting it go caused it to return to its resting position."

Dacron cables for the eye and brow mechanism. The creature's shoulder points straight into a junction box which rested more or less atop the head of the foam. At the junction box, which was the aggregate load on the mechanism, the cables were housed into thicker cables and then stretched. Beswick special-ordered cable that was mere 3/32nds-of-an-inch in diameter. A puppet had approximately twenty-five feet of cable. The cable have permitted its operation from fifteen feet away, ended up being considerably trimmed.

Even though further refinements — such as the eye being activated by a simple squeeze bladder — were added for realism, Beswick's 'keep it simple' dictum was particularly given the time, budget and artistic constraints. "The more cables, the more things can go wrong," observed Beswick. "The more the mechanism, it's amazing how much it can fit in a small area."

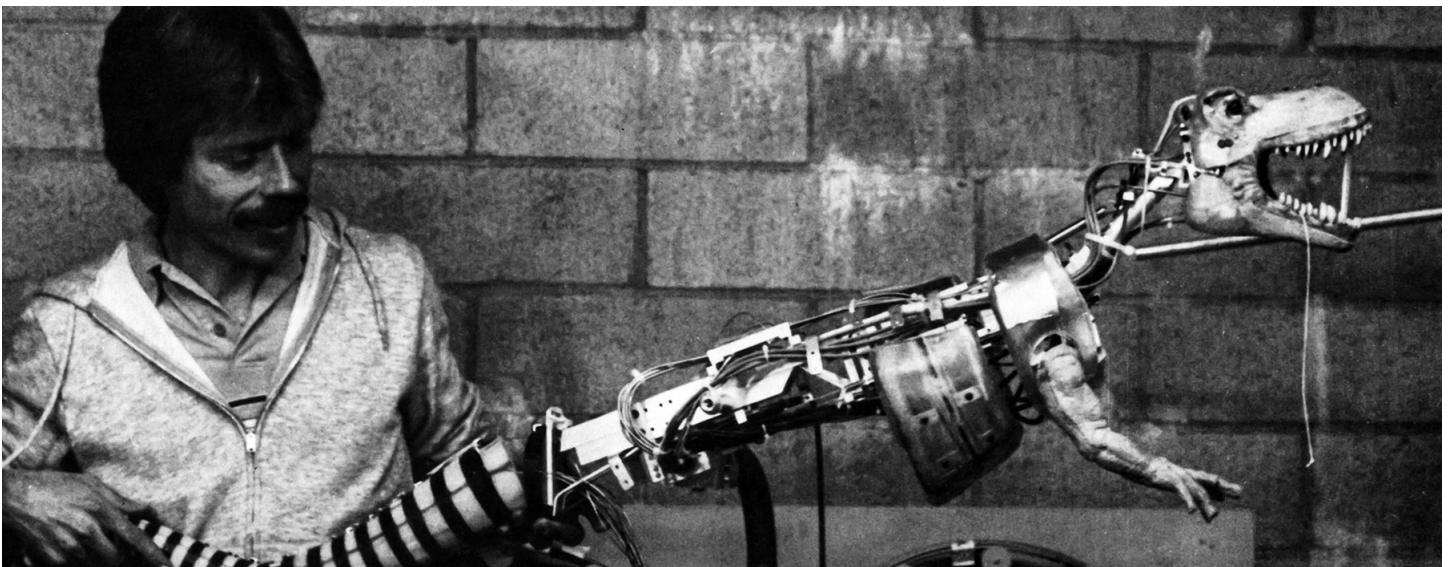
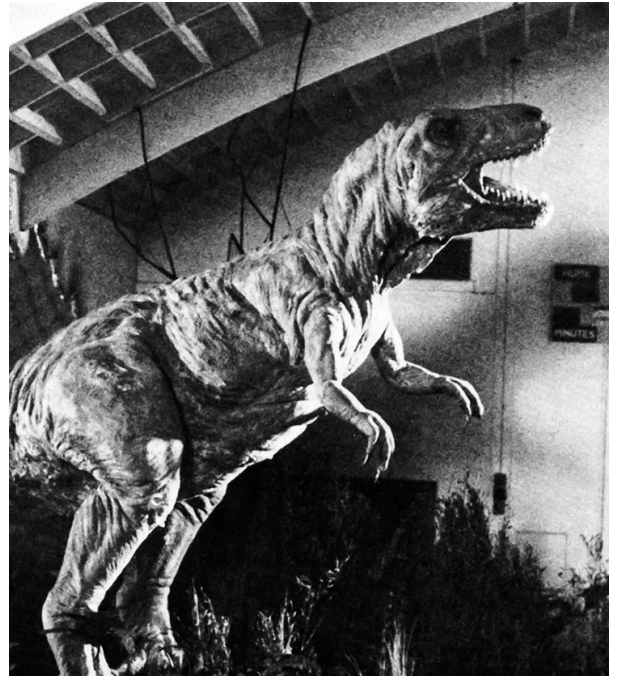
Beswick and Notaro were particularly proud of the creature's skull mechanism. Unlike a real animal's jointed head and neck movement mechanism, which remained unchanged from Notaro's first concept, the skull mechanism was a completely new concept. "The more time-consuming aspects of the mechanism were the functions at the back of the head that they were anatomically correct for movement. By referencing the blowup we had been talking with the other guys, I laid out the mechanism inside the neck. I ended up with three-axis movement at the back of the head and a two-axis movement at the front, in a very confined space."



the speed of movement by simply releasing the cable. To further enhance the effect, Beswick and Notaro devised a brow-furrowing device. For Tom Hester cut away a small piece from the fiberglass piece under the foam. After experimenting to find the right material, Beswick machined a hinge device from a nylon-like plastic often used for bushings. The fiberglass piece under the foam was bolted to the solid fiberglass shell, the cutout fiberglass piece. "We had a little pull it back to one position," said Notaro. By pulling on it, the brow would move toward the eye. Letting it go caused it to return to its resting position."

Dacron cables for the eye and brow were connected to the creature's shoulder points straight into a junction box which rested more or less atop the head of the foam. At the junction box, which was bolted to the fiberglass shell, the housings fed into thicker cables and then into the puppet. Beswick special-ordered cable that was 3/32nds-of-an-inch in diameter. A puppet had approximately twenty-five feet







length between the head and body — so have an exact nesting place when the finished mechanical armature.’

Although their tasks proved fairly straightforward aspects which might have gone making the fiberglass parts for the head pieces,” Lawrence said, “we had to make off the cores just so we could lay fiberglass. We decided we could have gotten away with molds, which could have been made in light pieces. But we all agreed with Doug. With he didn’t feel confident trying something

With the molds completed, Tony G. Baker’s contingent for the past two years: foam pieces. The foam was industry-standard produced by the Burman Studios. “The mold it took two people to pick it up,” said C accustomed to the kind of smaller components produced for the *Thriller* video, *Into the Living Dead*. “We didn’t have the facilities for one giant batch of foam, so we had to run a normal-size batch is 150 grams — the two of those to fill the body, plus 500 grams and legs.” The creature’s hands, feet and with the mechanics already in place, sealing over the joints with balloons and foam from seeping into the mechanics. first pair of arms that way. It’s nerve-wracking this large and get a high volume at the volume on foam is basically four to seven starts out with. We were trying to push it, we would have something that wouldn’t mechanics. Without using any additives mentioning with room temperature, mixtures, we were able to get a consistent cell structure and skin around eleven times, course, when we tried to pour the foam like meringue. And care had to be taken in it, which would have broken down the ceiling air bubbles that would have left pits in Gardner’s experimentation resulted in a more stable cell structure, and improved ability — all elements considered impossible under ordinary conditions.

With the foam pieces completed, Tony aided by Shawn McEnroe — who devised the scheme and did all the final painting touches involving the mechanics, fitting the armature and cosmetics. Considering the

shot by Disney effects cameraman Peter Anderson. Anderson's approach was to prerehearse the puppet, then shoot the run-throughs of its moves — the better to capture a spontaneous, live-action feel. Puppeteers Notaro, Hester, Rae and Lawrence toiled under a five-by-seven-foot raised set which duplicated sections of the school gymnasium and an area of prehistoric foliage. The set's six-foot-three undersection came to be known — occasionally with good humor — as 'Das Pit.' The pit was rigged out with video monitors which would, ideally, permit the puppeteers to hit their marks and coordinate the dinosaur's movements. Although some puppeteering functions were traded off, Mark Wilson customarily operated the vital head and neck cables, Phil Notaro supported the holster and coordinated the walk with Ted Rae on the legs, Tom Hester the arms, Tim Lawrence the tail and Shawn McEnroe the 'breather' and neck pulsations. David Miller — who designed the Dennis Hopper twist-o-head — performed on-set cosmetic touchups to the beast besides serving as pinch-hitter when other team members were unavailable. The group was cheered almost daily by the presence of Rick Baker, whose spirited coordination of the eye-blink and tongue functions, with Mark Wilson's expertise on the head and neck joysticks, prompted Doug Beswick to comment: "Rick really got into it — he just loves this stuff. And Mark's work was absolutely outstanding. We chose him because he's not only skilled, but works amazingly well under pressure."

Artist Shawn McEnroe devised the dinosaur's color scheme and accomplished the final paint job. / Huddled together in 'Das Pit,' the puppeteering crew runs through a movement with the completed tyrannosaurus. Main support for the creature was an inch-and-a-quarter diameter rod — doubling as a conduit for the articulating cables — which entered the camera-away side of the beast at mid-torso. / An up-angle from the pit reveals the leg-actuating rods extending down from the feet. / For a closeup of Vince's legs squirming in the beast's clutches, Mark Wilson slipped miniature pants and shoes over his

The set was prescored with adjustable tracks for the puppet rods to move through according to Betuel's storyboards. Since the previously-shot live-action footage entailed heavy ground fog — as much to enhance atmosphere as to mask the puppet's external support and foot rods — Peter Anderson's lighting and cinematography tasks were complicated by the necessity of matching fog levels, for which smoke machines, CO₂ and dry ice constantly churned. So thick and fast did the smoke filter through the set's slots to 'Das Pit,' the below-set monitors proved frequently useless, making it nearly impossible for the puppeteers to accurately hit their marks. To compensate for the clouded visibility, the monitors were often placed on the stage floor where smoke was less likely to obscure the view. When that gambit failed, Tom Hester hit on the idea of screwing long-handled foxtail paint brushes into the set's tracks, allowing the puppet rods free movement while the bristles' spring-back action cut down the smoke seepage.

The need to match the atmospheric qualities of the live-action footage continued to create problems and pressures. Originally, Betuel's concept was to suggest that the school gym wall had 'rezzed' open to reveal a moist prehistoric jungle. Though the conventional wisdom in planning such live-action/miniature matches is to avoid smoke and mist that would blur any bluescreen separations, Phil Meador and his optical crew

